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RHODODENDRONS FOR AMATEURS





LODER'S WHITE.

Frontispiece.

RHODODENDRONS FOR AMATEURS

BY

E. H. M. COX

L O N D O N
C O U N T R Y L I F E , L T D .
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TO
J. B. STEVENSON

INTRODUCTION

THIS volume, as its title implies, is strictly utilitarian in its purpose. It has been written in order to supply amateur growers of this fascinating genus *Rhododendron* with information of a simple and practical nature. It consists of chapters on distribution and habit, cultivation, and situation, together with lists of desirable species and hybrids, both rhododendrons and azaleas, which are in fairly general cultivation, and are either obtainable from nurserymen or will be in a very short time.

The large number of species which have lately been introduced into this country by Wilson, Forrest, Kingdon Ward, and Farrer, makes this selection no easy task. Many of the new discoveries have been heralded with descriptions almost lyrical in their praise, but the plants have not yet been a sufficient time in cultivation to gauge their garden value. To the ordinary gardener this may complicate the issue.

In the lists both of species and of hybrids I have been guided entirely by my own judgment of what is worthy of inclusion in our gardens. There is always a reason at the back of my mind for the exclusion of any particular species or hybrid. For instance, no mention is made of *R. Aucklandii*, probably the finest rhododendron in the world, but it is not hardy except in Cornwall and a few very sheltered gardens in the South of England and Ireland.

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It may appear that rhododendrons are not so easy to cultivate as is generally imagined, but I have given such information and criticism as may be found in the following pages on the theory that what is worth growing is worth growing well. It is easy to get some result from a plant, although it may be difficult to bring it to perfection.

There has always been a mistaken theory among gardeners in this country that rhododendrons are easy to cultivate. This is only the case in the hardiest of garden hybrids. Rhododendrons, it is true, require little attention, once they are planted in a situation to their liking; but in the seedpans and the nursery beds they must have their wants attended to, like any other valued plant. I have been much struck by the lack of success in the cultivation of different genera, not only rhododendrons, solely owing to misplaced and careless planting. Simply because aubrietia will flow in cascades over a dry wall is no argument that a tiny androsace from the high alps will flourish under the same conditions; and yet such experiments are often tried on a plant, with the result that aubrietias may be grown to excess and an androsace relegated to the limbo as a plant impossible of cultivation.

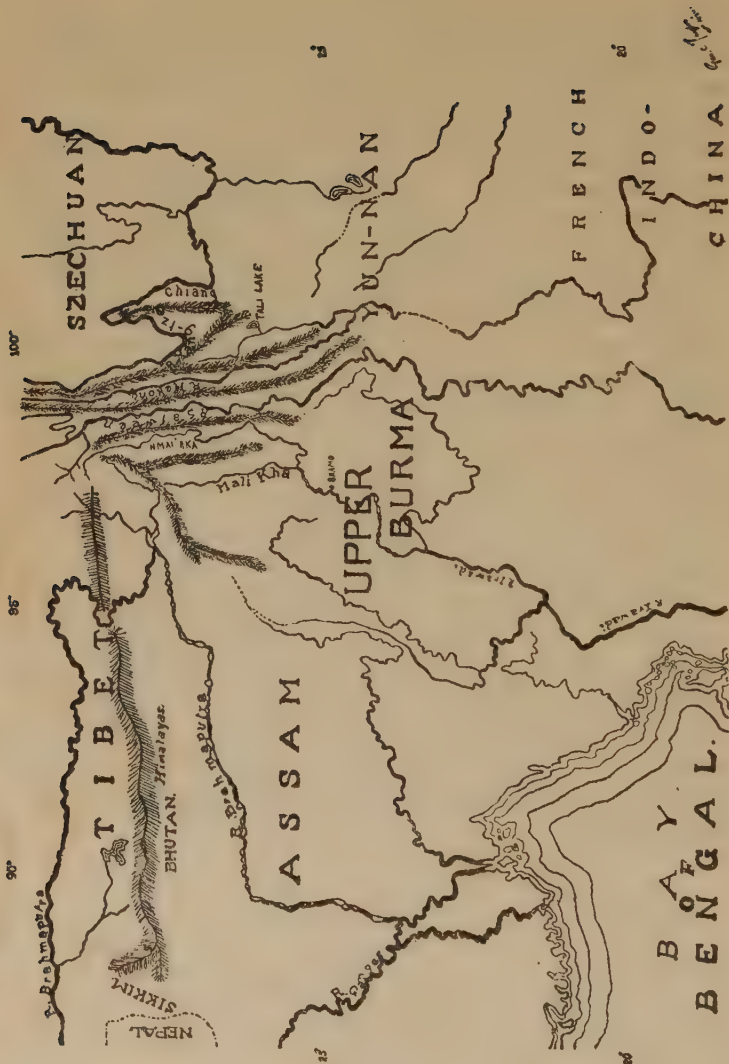
This may appear to be drawing attention to an extreme case, but I have seen such a deal of time and energy wasted owing to lack of imagination. Every garden owner and lover of a garden should keep one thought dangling in front of his nose: *Every plant has a personality*. It is a good motto to hang up on the wall of the potting shed. It is not always possible to find a plant's personality in print, and what is written may not always be correct, but it will often

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be a help in finding the road to success with a plant, to inquire into its origin and method of growth in its native habitat, or to find out a gardener's experiences with it in this country.

It is only within the last few years that our rhododendron knowledge has grown sufficiently for it to be possible to give advice upon the cultivation of the many new species which are pouring into this country. Even now there are great hiatuses in our knowledge which will only be bridged in time. Some day all garden lovers will realise the great debt of gratitude they owe to the late Sir Isaac Bailey Balfour and to Mr. J. C. Williams for their unswerving loyalty to this great genus. They were far-seeing enough to prophesy, many years ago, the ever-increasing popularity of the finer rhododendron, and to prophesy at a time when rhododendrons were under banks of cloud which they have done so much to dissipate.

My thanks are due to Professor William Wright Smith and my other friends at the Royal Botanic Gardens, Edinburgh, to Mr. Lionel de Rothschild, to Mr. Harry White, and to Mr. J. C. Williams, for their unfailing kindness. I am also greatly indebted to Mr. J. B. Stevenson, of Tower Court, Ascot, for his advice and help in the formation of this small volume.



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THE PRINCIPAL COLLECTORS OF RHODODENDRONS

- FRANCIS HAMILTON was the first introducer of *R. arboreum* in 1810.
DR. WALLICH. Collected in Bhutan and Assam between 1813 and 1847.
WILLIAM GRIFFITH. A colleague of Dr. Wallich; discovered *R. Falconeri* in 1837.
SIR JOSEPH DALTON HOOKER. Travelled in the Himalayas and Sikkim between 1847 and 1852. Introduced most of the Himalayan species now in cultivation.
ROBERT FORTUNE. Made several trips to China between 1842 and 1859. Discovered *R. Fortunei*, otherwise his rhododendron discoveries were insignificant.
ABBÉ FARGES. A French priest in western Szechuan from about 1885 to 1895.
PÈRE DAVID. A French missionary in western Szechuan and northern Yunnan about 1885.
PÈRE DELAVAYE. A French missionary in Yunnan about 1885.
PROFESSOR AUGUSTINE HENRY. Collected in southern Yunnan from 1896 to 1900.
ERNEST H. WILSON. First collected in Yunnan in 1899. From 1900 to 1912 made several expeditions in Hupeh and Szechuan. Made further botanical explorations in Japan, Korea, Formosa, etc., since that date.
GEORGE FORREST. Has collected in Yunnan and south-east Tibet almost continuously from 1904 to the present day.
F. KINGDON WARD. Has made numerous trips in Yunnan, Upper Burma, south-east and south Tibet between 1911 and the present day.
CAPTAIN F. M. BAILEY. Found several rhododendrons during a journey through Bhutan and south-east Tibet in 1913.
R. E. COOPER. Travelled in Bhutan during 1914 and 1915.
REGINALD FARRER. Kansu-Tibetan border, 1914-1915. Burmese-Chinese border, 1919-1920.

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RHODODENDRONS FOR AMATEURS

CHAPTER I

THE DISTRIBUTION AND HABIT OF RHODODENDRON SPECIES

RHODODENDRONS are widely distributed in the Northern Hemisphere. There are four species in Europe, two in the Arctic regions, three in Siberia, seventeen in North America, while the number of named species found in Central and Eastern Asia, stretching from the Caucasus to Japan, must be rapidly approaching a thousand. There are in addition a number of tropical species which are outside the purposes of this volume, since none of them are hardy.

Although many species come from the Caucasus, the Himalayas, Japan, and Northern China, yet by far the larger number come from Upper Burma, the semi-independent States lying between Tibet and China, and the Chinese provinces of Hupeh, Szechuan, and Yunnan.

Before anything is said about the conditions in which they grow, it is only fair to the members of the

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genus and to those who have worked so hard upon their determination to try to explain, by means of a little geography, the reason for the unusual number of species into which the genus is divided.

It is almost certain that the central home of rhododendrons lies in that area where Tibet, China, Upper Burma, and Assam meet. If you can imagine that area to be the palm of a very large hand, the Himalayas will act as the thumb stretching to the west, the Irrawady-Salween and the Salween-Mekong divide as very definite first and second fingers running north and south. The third finger is the Mekong-Yangtze divide, which becomes involved in twists and turns, while the little finger is lost in a tangle of contorted ranges stretching out through Hupeh, Szechuan, and the Tibetan Marches. At any rate, this imaginative hand will show that there are very definite divisions between the ranges which are cleft by the mighty rivers flowing out of Tibet. One of the most noticeable features of all this country is the extraordinarily deep river valleys. On the borders of Tibet the actual river beds are only a few thousand feet above sea level, although surrounded by mountains often of 18,000 feet or more. For the moment the thumb can be left out of the calculations.

Now suppose that rhododendron A, living in the palm of the hand, bears three seed pods and that the progeny from each seed pod in the course of centuries travels down fingers 1, 2, and 3. For the first few miles conditions are the same. Then what happens? A1, on its way down the Irrawady-Salween divide, moves along a range which gets the full force of the south-west monsoon, the wind which brings rain to

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India from June until October. The plants from seed pod A1 have to live in a land entirely rain-soaked during the summer months, for the force of the monsoon is sufficient to water both east and west flanks of the divide impartially.

Plants from pod A2 in their turn travel along the Salween-Mekong divide. There the force of the monsoon is still strong enough to deposit a large rainfall on the western flank of the ranges, but it is nearing the end of its strength. The Salween valley is wet, but that of the Mekong is dry. I am not certain whether readings have been taken of the rainfall on the western and eastern slopes of the Salween-Mekong divide, but I venture to guess that the rainfall on the western flank exceeds that on the eastern by 40 per cent. In any case the rainfall is considerably less on both flanks than on those of the Irrawady-Salween divide. This means that plants of A2 live in different conditions to those of A1. Plants on the third and fourth finger being still further away from the influence of the monsoon are entirely unaffected by it and live in a climate of their own, nearly approximating conditions found on the European Alps.

Owing to the great variations at different altitudes in climate and temperature, it is practically impossible to conceive of any movement of plants from one divide to another. This is proved by the extremely localised flora to be found throughout Yunnan and the Tibetan Marches.

In our present state of knowledge of that tangle of ranges, who is to say that A1, A2, and A3, after having travelled several hundreds of miles down the

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ranges, are the same rhododendrons? Many generations with the accompanying separation in climate and soil breed more definite differences in the plant than variations in size and colour. In many cases it is known that A1 and A2, or A2 and A3, are very closely allied, but A1 and A3, although obviously related, have clear and well-defined variations. Until a thorough botanical survey is held of that furrowed mass of hills and valleys, and areas already botanically explored are linked up, it is next to impossible to make definite statements, except the general one of consanguinity; so A1, A2, A3 are each given names as separate species.

I can see no other reason for this mass of slight physiological differences which is making the determination of rhododendrons so difficult, except it be the application of the theory of acquired characteristics. Many rhododendrons do not come quite true to form and colour from seed, and there is no doubt that natural hybrids are found among them in their wild state, particularly in Yunnan, thus making their determination even more difficult.

As a matter of fact this multiplicity of species is not so serious to the amateur as it may seem, for A1 will probably, and A2 possibly, prove too difficult to cultivate in our gardens owing to the extreme differences in climate between their native homes and the British Isles. At any rate, it is almost a certainty that one member of a closely allied group will prove to be so far superior in cultivation to all its relatives that the others in time will drop out, except in the collections of the specialist. Naturally this takes time, and they all have to be tested, but this is

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done by the specialist and hardly enters into the field of the amateur who likes rhododendrons but only wants to grow the best in his garden.

To return for a moment to the Himalayas; here the number of rhododendron species is comparatively few, and variation, as it is known on the Chinese ranges, is absent. The reason for this seems to be that the climate in the whole area of the Himalayas on which rhododendrons are found is identical; also there are no parallel ranges along which they can travel, while the valleys between the lateral spurs are not nearly so deep as they are on the Chinese ranges, so evolution tends to be the same on the whole range. It is a peculiar fact that no new rhododendron species or natural hybrid has been found in the Himalayas since the days of Sir Joseph Hooker. There is little doubt that rhododendrons are stationary in the Himalayas, whereas they are still progressing in China.

As I have stated above, our knowledge of rhododendrons is only in its infancy, and what I have said must only be taken as a possible reason for the extraordinary variations in relationship to be found among the rhododendrons of Western China. What makes it the more probable is the fact that the further away they grow from western Yunnan the more clearly defined are the types.

In referring to rhododendrons and their situation it is usual to classify them in four groups—*i.e.*, tropical, forest, scrub, and alpine; to these I would possibly add a fifth, what might be termed table-top rhododendrons. It is as well to point out that this broad

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classification is purely arbitrary. No definite altitudes can be given for the heights at which the various groups are found, as vegetation varies in different parts of the country, but the average altitude of forest may be taken as from 7-10,000 feet, of scrub 10-11,500 feet, and of alpine anything over 11,500 feet.

Forest rhododendrons are those which make their home in and around forest, but this does not infer that such rhododendrons grow in dense shade. Even in the case of such species as *R. giganteum* and *R. sino-grande*, which grow definitely to a height of 80 and 50 feet respectively in the thickest forest, this does not mean that they live under other trees. They grow as part and parcel of the forest and are drawn up to the light along with their neighbours. In the case of other forest rhododendrons it means either that the climatic conditions suitable for the growth of forest trees are also favourable to their requirements, or that they require shelter and food which is supplied by the forest. Rhododendrons in a given area may be so plentiful that they form the dominant tree, in which case the forest may be composed entirely of rhododendrons, with an occasional sprinkling of conifer or hard wood. Kingdon Ward speaks of a forest entirely composed of *R. niphargum*, which, although not often found over 20 feet high, is entirely tree-like in its growth.

In field notes made by collectors the words "growing on the edge of mixed or conifer forest" are often seen. That term exactly explains their situation, for it is either in very thin forest or in clearings in the

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middle of forest where the light can get in, or along the edges where the trees begin to scatter, that the majority of forest rhododendrons are to be found. This point is important because many who hear the term "forest rhododendron" are inclined to take the term literally and plant them in too deep a shade for their liking.

This preference for climatic conditions suitable for forest trees is the reason why a number of species in this group which do not grow to any size (*i.e.*, many of the Madden series) often perch themselves in the forks of large trees, or on rotting trunks in a clearing on the ground, where they can get the humus and the nutriment they like and also see the sun occasionally. They are not true epiphytes, for they merely lodge themselves where there is sufficient soil in which they can root.

Care should be taken in the selection of these forest rhododendrons, for it is mostly in this class that all those congregate to which the term half-hardy can be applied. In Upper Burma, and in the watersheds of the Salween and its tributaries, forest means rain-forest or jungle, a condition of affairs which cannot be supplied in this country. The further east the plants are collected, the less of a bogey the term "forest" becomes, until all fears vanish when "forest rhododendrons" are mentioned among plants collected by Wilson and others in Hupeh and Szechuan to the north of the Yangtze river.

Naturally there are exceptions, even on the Irrawady-Salween divide; *R. giganteum* appears to be hardy, although a slow grower. On the other hand, there are several now coming into cultivation, of

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which *R. Kyawi* (Farrer, 1444) is an example, which are better left alone, for they are badly cut by the frost even in Cornwall.

Scrub rhododendrons grow in coppice, or in clearings in thin woodland; they thrive in the home of the rowan and the birch and the berberis. In many areas they are scattered in open glades among bamboo brakes. To the collector this is the most interesting kind of country, for around every corner he expects, and often finds, a new rhododendron, a new primula, or a new iris, besides other fine plants. Scrub country is the most prolific in all classes of vegetation useful in our gardens, and to my mind the usual scrub rhododendron is the most convenient in size, being neither too large nor too small. As a rule this class is hardy, even those which live on the Irrawady-Salween divide, but, with the exception of the *Triflorum* series, they are slow growers; this is true both of wild and cultivated plants. On the other hand, most of them flower within a reasonable period of years, and there is never so long a wait as in the case of tall-growing rhododendrons.

It is this convenient bush form which is most at home in our gardens, for they slip into place without any sense of effort. No special area has to be made ready for their reception as in the case of their larger cousins, nor is it difficult to find space in any garden, even if it is only for one or two in the corner of a collection of shrubs.

Alpine rhododendrons are those which grow above the limit of scrub or on moors near its upper limit;

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they thrive in corries and on the bare tops, where they often grow in the same way as heather on Scotch moors. They are buried under snow in winter, and are often enveloped in mist during the summer. I have tramped over mile after mile of them where the only other plants to be seen were *Salix alpina* and *Cassiope myosuroides*.

Owing to the beauty of their flowers and their pungent aromatic scent, several attempts have been made to acclimatise some of the Lapponicum series on the Scotch moors, so far without success, although on the west coast climatic conditions would appear to be favourable. I should imagine that to ensure even a modicum of success a large area would have to be entirely denuded of heather, roots and all, for this is a case of two dominant plants, the one of the Chinese, the other of the Scotch moors. Two dominant plants of the same growth and habit will not run in harness together, and the one with the longer start will ultimately close in on the other and smother it out of existence.

Table-top rhododendrons refer to species which have a method of growth so far not attempted in this country. They consist of scrub rhododendrons which grow in exposed positions, even above the scrub limit, in enormous masses, sometimes acres in extent, composed usually of one species. They are invariably open to the full blast of the wind, and, because they live in mass formation, they have formed their own shelter and so have grown to almost their full stature. On the other hand, with the wind constantly sweeping over them, their tops have been

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blown over in the direction away from the prevailing wind and have become so interlaced as to form an impenetrable thicket. So thick is this interlacing that it is sometimes possible to walk for several yards on the top of the plants without your feet slipping through a hole between the branches.

Whether this is a condition of growth possible in this country remains to be seen. I do not think that winter conditions matter, but I believe that this form of growth is commoner in districts under the influence of the monsoon, so it would appear that moisture during the summer months is a necessity. Among rhododendrons which are seen growing in this way are *R. plebeium* and *R. dichroanthum*, both of them very fine species. When their stock in this country has increased, this method of cultivation might be tried on the west coast on a hillside fully exposed to the westerly wind. I can imagine nothing finer than a flat mass of *R. dichroanthum*, with the whole of its table-top a shimmering sea of deep orange bells. In my notes on the plants themselves I have made no mention of this method of planting, because several hundred plants would be required to make the experiment worth while, and several hundred plants of suitable species are not to be acquired at the present moment, nor for several years to come.

It is a mistake to complain about plants dying in this country and imagine that they have no casualties in their native home. There are deaths, thousands upon thousands of them. Both Forrest and Kingdon Ward recollect marching, during the drought of 1921, through many miles of country where the only signs

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of vegetation to be seen were dry sticks garlanded with a few withered leaves. This, of course, is a visitation and is not caused by the petty pinpricks of the weather from which we suffer in this country. When the weather in the East makes up its mind to do anything out of the ordinary, it is very thorough about it and the result is a holocaust.

This calls to mind the interesting fact that seedling rhododendrons are not often seen in China or in the Himalayas. The country is so filled with vegetation that it is a case of the survival of the fittest. Every inch of ground is utilised by some plant or other, and when rhododendron seed falls among healthy vegetation it is smothered at birth, if, indeed, it germinates at all. It is only when an area is cleared by fire, or drought, or a landslide, that seed has a chance to germinate and come to maturity; in fact, it is a case of nature making its own seed bed. Where a small clearing is made by plants dying a natural death, it is only a matter of replacement, and in most cases I should hazard the opinion that the replacer is not of the same genus as the original inhabitant. Particularly is this the case in trees and shrubs, for forest or scrub in a given area is usually of the same age, so conditions are not satisfactory for a seedling from the dead plant to have a chance of coming to maturity, owing to the height of the surrounding vegetation.

In conclusion, there are one or two inferences to be drawn from this chapter.

1. Do not be unduly alarmed at the seeming multiplicity of rhododendron species. The sheep are being weeded from the goats as rapidly as possible.

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2. In buying rhododendrons which grow to a large size, be careful to find out their climatic requirements, and the area in which they grew. There is nothing more trying than to buy a plant and, after nursing it for years, find that the flowers are invariably cut by the frost. A good plan is always to buy plants from a nurseryman who lives further north than you do. The plants will have been tested for you.

3. If you are in a part of the country which is betwixt and between, neither mild nor frozen, beware of rhododendrons which flower too early. In their native home there is no pseudo-spring which forces plants into an unnaturally early growth, with the added delight of cutting it with a late frost. *R. Kyawi*, which has been mentioned previously, although it will never be a satisfactory plant, is proving itself more hardy on the east coast of Scotland than in Cornwall, solely because it has little or no chance of making early growth.

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CHAPTER II

SITUATION

I HAVE tried in the chapter on distribution to give some idea of the conditions under which rhododendrons live in their native home, which gives a partial explanation as to the reason why the question of situation is so important. The first thing to remember is that the rhododendron is not a plant which loves the sun and that which goes with it, a blue sky and a dry atmosphere. They have no real objection to heat or cold, but they like them at their proper seasons; what they prefer above everything is a dry winter and a moist summer. They are typical plants of the half-shady woodland, and the one point to forget is that they have ever been seen in a bed suitable for herbaceous plants or annuals—this, of course, does not apply to azaleas. Once this fact is realised the question of situation, both of species and of hybrids, is considerably simplified.

It must be remembered that in the past rhododendrons in our gardens have mostly consisted of *R. ponticum* and old hybrids, which were planted with no regard to their situation. Gardeners in those days were not rhododendron-wise, but those old-fashioned plants were considered to be satisfactory, for they were tough and hard to kill. Now with the

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influx of species and better bred hybrids we are getting far more critical about the standard which our plants should reach, and we are finding that a certain amount of rhododendron lore is necessary.

It is still only too common an occurrence for gardeners to dismiss an unhealthy-looking rhododendron with the remark that rhododendrons are not hardy in that particular locality. This is a mistake, for almost every lime-free garden in the British Isles has at least a few square feet in which rhododendrons of some sort or another will thrive. In most cases of sickly plants the fault is not one of constitution, but lack of knowledge on the part of the grower.

A few broad rules can be laid down, but common sense and a little experience will accomplish more than fifty pages of advice.

What they require is a well-drained soil, shelter from the wind, a sufficiency of shade, and as damp an atmosphere as possible.

SOIL

Rhododendrons will grow in any soil which is free from lime; it is not sufficient that the soil alone should lack lime, but the water used for artificial watering should not be impregnated with it. I know of several pockets of greensand on the South Downs which are quite free from lime and should be ideal, but the water supply comes from the chalk above, and so, when artificial watering is necessary, the plants suffer.

A possible reason why a number of rhododendrons in China live in a limey locality has lately been put forward. It is supposed that there is a fungus which

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lives along with the roots of the plant and apparently counteracts the effects of the lime. This fungus is not known in this country and is not carried home with the seed. There are many instances of experiments which have been made of growing rhododendrons in lime in this country, but they have never been really successful. My advice is, if you live on lime, do not grow rhododendrons; there are many other fine flowering shrubs like veronicas which thrive on it and will repay cultivation a thousandfold; not so the rhododendron.

Rhododendrons like a soil with a certain amount of acidity in it, which is provided by decaying vegetable matter; they must also have a soil sufficiently porous to allow for proper drainage; under no circumstances will they tolerate stagnation at their roots. Many people say that peat is the ideal soil and that a certain amount of it is a necessity to obtain the best results. There are, however, divergent opinions on this subject, and I believe that peat is not necessary. The great advantage of peat, and this applies also to leaf mould, is that it is so porous that it allows the very fine roots of the rhododendron to spread. Where it is easily obtainable peat should certainly be used, but where it is not to be had locally, the trouble and cost of carriage is not worth the slight superiority it may have over good loam and leaf mould. A warning should also be given here regarding peat. If you have a peat-bog at hand, the peat should be spread out and exposed to the sun and rain for several weeks before use. Rich new peat is so strong in acid that it will actually damage the plants if used when quite fresh.

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Any loam or greensand is satisfactory for growing rhododendrons, provided that a sufficiency of humus is present. The stiffer the soil the more trouble will have to be taken over its preparation. If the soil is liable to cake, it is an advantage to add a little hard sand or gravel when working it, which will help to keep the soil loose. It must be remembered that, with the exception of forest rhododendrons, most of them in their native habitat grow in a poor soil, much of it broken rock, which ensures rapid drainage, with a coating of leaf mould or peaty soil on the top, so it is not always an advantage to plant your scrubby or dwarf species in too rich a soil, which will make them run to wood and perhaps have poor flowers. If the soil is deficient in humus, dead leaves and weeds collected in the autumn should be left on the surface to be mixed in with the soil by winter rains.

SUN AND SHADE

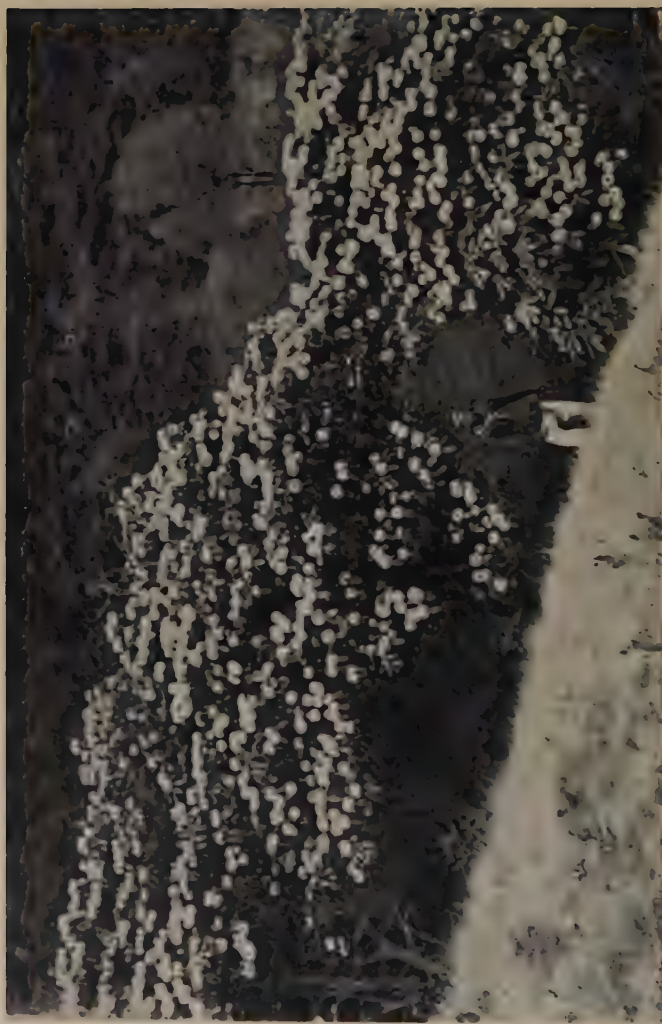
Too much sun damages and ultimately kills practically all rhododendron species. The symptoms are the same as with any other plant: flowers scorch, leaves curl inwards and brown, while the whole plant wilts and looks parched. The important point is to shade not only what is seen above the surface, but also the roots.

Rhododendrons are surface rooters with a most intricate system of fibrous roots which are very easily burnt up in the same way as the leaves. They are exceedingly susceptible to the amount of moisture in the soil and the temperature of their roots. There is such a thing as capillary attraction in the soil, by



TYPICAL RHODODENDRON COUNTRY ON THE BURMESE-CHINESE
FRONTIER.

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R. FICTOLACTEUM IN ITS NATIVE HABITAT.

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which moisture is drawn up to the surface; this is particularly active in a porous soil. On the other hand, the capillaries are broken by any hard strata, such as that of a hard pan or a broken-down surface, and so water cannot rise from underground. The reason why gardeners always hoe the surface of the soil in dry weather is that the hoe breaks the capillaries, and so the water does not evaporate.

Owing to the fact that rhododendrons in their native home usually get more moisture in the summer than they do here, we must conserve what moisture we have. This can be done by means of heavy mulchings of leaves or coarse leaf mould, and by giving the plants sufficient shade. They are both important.

Shade plants should be chosen which give leaf mould to the soil, and deciduous trees fill this requirement better than conifers. Care, however, should be taken that such trees are not shallow rooters which steal moisture and food from the rhododendrons. Trees to be avoided wherever possible are elms, horse chestnuts, spanish chestnuts, planes, and beeches; of these the elm is probably the worst. Of deciduous trees by far the best are oaks, birches, laburnums, cherries, and magnolias, and among shrubs for shading small species, viburnums and berberis.

It is as well to point out that, all other things failing, it is better to have even elms or chestnuts as shade plants than to have no shade at all, but it means that more work will have to be done every year to keep their roots within bounds. The best method is to dig a deep trench round your rhododendron ground, deep enough to cut through the main roots of the trees.

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One is inclined during the early stages of rhododendron enthusiasm to segregate them into shrubberies by themselves and to form them into separate collections. This is a mistake. I know of a few places with such perfect shade that nothing need be done except an occasional thinning, but such woods are few and far between, and in most cases a certain amount of shade has to be grown along with the rhododendrons.

It is possible with a little time and trouble to evolve your own shade system with a few large trees as a ground work, so that the whole effect will not only give shade, but also add beauty to your garden. One such combination comes to my mind; it is a garden near Sunningdale where azaleas are cunningly grown among a grove of Japanese cherries, and nothing can be more lovely. First come the cherries with their pinks and whites, followed by the crimsons and oranges of the azaleas at the time when the first green is beginning to clothe the cherry trees.

Oaks are probably the best of all shade plants for rhododendrons. There are many which may be chosen, but it is best to plant those which are more or less fast growers. *Quercus rubra* is one of the most useful and the most handsome with its sharp-cut foliage. In a young state it is particularly vigorous in its growth. Then the Turkey oak, *Q. cerris*, should not be forgotten, as it is quick-growing and elegant in growth. Another one which thrives well in cultivation is *Q. conferta*, a native of South-east Europe, but quite hardy in this country. One of the best for this purpose is *Q. serrata*, which Mr. Bean calls a neat and cheerful-looking tree. In Japan it springs up on

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waste ground. This oak is valuable for the rhododendron garden, as it does not grow over 50 feet high and never spreads to such an extent as our British oaks, which in old trees sometimes gives too heavy shade.

Birches are amongst the pleasantest of shade trees. They have a slender grace and beauty which is all their own; they are fairly deep-rooting and do little harm to rhododendrons. These two genera appear to have an affinity for each other, for, if birches grow well in a garden, so will rhododendrons. There are a large number of birches from which to choose; among the best are *Betula fontinalis*, the Western Black Birch with bark almost black in colour; *B. lutea*, the Yellow Birch; *B. Maximowiczii*, with large leaves; *B. papyrifera*, the Paper Birch; or any of the numerous birches lately introduced into cultivation from China, among them a group of red birches centering around *B. Delavayi*. All of these may be grown in conjunction with our common birch, and all are attractive.

Most cherries are attractive, and all are equally good for growing along with rhododendrons. Among the best varieties, many of them fairly new to cultivation, are *Prunus Conradini*, *P. pilosiuscula*, *P. salicina*, *P. dehiscens*, *P. serrulata* var. *Sakhalinensis*, *P. yedoensis*, and *P. subhirtilla ascendens*.

Magnolias are also shrubs and trees which like very similar conditions to rhododendrons; they are typical plants of the open woodland. The ordinary *Magnolia conspicua* (the Yulan) with its hybrid, *M. Soulangiana*, and *M. stellata* are so well known that they require no comment, but there are many others which

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are not seen often enough in our gardens, such as *M. salicifolia*, a slender tree, with small white flowers and thin leaves; *M. kobus borealis*, the tree form of the common *M. kobus*; *M. parviflora*, with bowl-shaped flowers and scarlet stamens; *M. Wilsonii*, with fragrant saucer-shaped white flowers; and *M. virginiana*, with creamy flowers which open from June to August. These are only a selection of those which are suitable for growing along with rhododendrons.

There is a general belief that the drip falling from certain conifers is injurious to rhododendrons. There seems to be some doubt about this point, but the damage, if any, is not serious. On the other hand, a little ingenuity must be used where conifers are planted along with rhododendrons, for as evergreens they keep off rain all the year round. It is advisable to allow for expansion, so rhododendrons should be planted well outside the possible area of conifer foliage. On the whole, it is better not to use picea, for I find that their needles take the longest time to rot on the ground and so make poor leaf mould.

As mothers for the smaller rhododendron species, few shrubs can equal Viburnums. They are accommodating in their habit, and with their infinite variety and quick growth they are useful in many positions. *Viburnum Carlesii*, *V. Davidii*, *V. Henryi*, *V. lantana*, *V. opulus* in its many varieties, and *V. fragans*, are all excellent. Of the berberis I should advise species like *B. Wilsonæ*, in preference to plants like *B. stenophylla*, which are difficult to keep within bounds and have to be cut back every few years. It is easy, however, to find shade for smaller rhododendrons; it

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is for the larger species that it usually has to be manufactured.

As a rule the larger the leaf the more shade a rhododendron will require. Those with glaucous foliage stand a greater proportion of sunlight than most of the species; the same applies to the Triflorum series. Sunlight should reach rhododendrons spasmodically; that is, they should not be in a position to get the full strength of the sun for more than an hour or two at a time. The strength of the sun varies according to situation. It is strongest in the home counties, and is more powerful on the east coast than on the west.

WIND

With the exception of the dwarf alpine species all rhododendrons dislike wind; in fact, as much damage is usually caused by wind as by frost and drought. If your rhododendron ground is not naturally sheltered from the wind, shelters must be made. As a shelter hedge *Cupressus Lawsoniana*, *C. macrocarpa*, and *C. obtusa* are all excellent. They grow fast and so thick that they form a real barrier to the wind. In many places bamboos are used with good results, although care must be taken not to plant kinds which run rampant by means of underground suckers. *Arundinaria fastuosa*, although it does increase by suckers, is very handsome and is not so rampant as some species. *A. japonica*, one of the commonest species in our gardens, is very hardy and accommodating; but the best species is undoubtedly *A. nitida*, which is absolutely hardy and of very vigorous growth.

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It grows particularly well in conditions suitable for rhododendrons, that is, in semi-shade and with abundant moisture in the soil. Among those which should be avoided are *A. pygmaea*, now called *A. vagans*, *A. Veitchii*, *A. angustifolia*, and *A. humilis*, which all become a nuisance in the garden.

If in your garden there are old thickets of *R. ponticum* or any of the early hybrids, these should be preserved. They give excellent shelter for finer species or hybrids, and bays can be cut out of them to hold individual plants. They are easily kept within bounds with a knife and are exceedingly useful.

In rhododendron grounds of large size it is a good plan to plant interior hedges of some rhododendrons of which you may have a large number of plants, or of some rhododendron which is easily propagated by means of cuttings. Such hedges help to break the wind and are also magnificent when in flower. *R. praecox*, *R. discolor* and *R. decorum* are useful in this respect, and also members of the Triflorum series, such as *R. yunnanense*, *R. chartophyllum praecox*, and *R. ambiguum*. As they help to segregate brilliant coloured species into separate bays in your garden, such hedges should not be made of those with flowers of a striking colour.

Perhaps it may appear after reading this chapter that I am laying too much stress on the woodland garden, which is by no means within the reach of every gardener. This is far from my intention, but they are so much a plant of the woodland that when taking them as a whole I am bound to reason along these lines. There are situations, even in the smallest

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garden, where they will thrive and beautify their surroundings, but in that case the owner or gardener must be careful over his choice. He should be content to leave the big-leafed species out of his calculations and concentrate on plants of a size which will find conditions to their liking. Without a doubt, the most valuable series for the ordinary garden is that centering around *R. triflorum*. They are not exacting, grow quickly, and are very floriferous.

Another complaint may be that I have said little or nothing about hybrids, but for all questions relating to situation, the treatment to be meted out to them should be approximately the same as to species; this particularly applies to first crosses. Although so popular, I, personally, have not much love for the old garden hybrid. The colours may be brilliant, but they are often spotted, while battalions of them are exactly the same in appearance and shape. Of course, I do not include in this category such hybrids as Pink Pearl, Cunningham's Sulphur, Broughtoni, and so on, which well deserve their popularity.

Sufficient drainage is a necessity.

The larger growing a rhododendron, the more shade and shelter it requires.

Sunlight should be intermittent.

The nearer you get to open water, the more moisture will be in the atmosphere.

Beware of the roots of shallow-rooted trees; they suck up the nutriment and moisture intended for your rhododendrons.

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CHAPTER III

THE CULTIVATION OF SPECIES AND HYBRIDS

SOWING

IF rhododendron seed is fresh, the proportion of fertile to infertile seed is large, while germination is comparatively quick.

It is best to use earthenware pans both for sowing and for pricking off, as they are kept more easily clean and hygienic than wooden boxes. One of the great secrets of successful cultivation of rhododendrons from seed is efficient drainage of the seedpans, and to ensure this they should be filled as much as two-thirds full of broken pots, or better still, broken soft brick, which is more absorbent than pots.

You have a choice of medium in which to sow the seed; peat litter has lately been tried and has been found excellent. It does not cake in the way that a compost may, and when the difficult business of pricking off takes place the plants are easily separated without damaging the tiny roots, while moss and weeds are not so likely to occur. On the other hand, it has been found that a few of the newer species which grow on limestone in China will not grow in peat. This is the ordinary litter used for bedding horses; it should be broken up and thoroughly soaked before use. Moss has also been used, but the

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seedlings are inclined to draw and are difficult to move without root damage. A good compost is composed of one-half hard sand, and the other half of well-sifted leaf mould.

If the seed can be sown in early spring, which means early pricking off and only a short stay in the seedpans, the sowing medium is not of great importance as long as the material is conducive to quick drainage, but when the seed is sown in the autumn and the tiny plants have to remain in the seedpans over the winter, either peat litter or the compost mentioned above should be used. In any case the seed should be sown at the earliest opportunity, as it is with fresh seed that the best results are obtained.

Seed should be sown evenly and thinly, and should never be so thick that germination is like that of mustard and cress, for if the plants come up in mass formation air cannot circulate around them, and damping, that bugbear of all who raise rhododendrons from seed, will probably attack the pans. If you are doubtful of your skill in sowing thinly, mix the seed with an equal quantity of dry sand and then sow. Before sowing the pans should be thoroughly soaked and then left for an hour for the surplus water to drain off. It is not necessary to cover the seed, for the roots find their own way into the soil, although they may squirm on the surface for a week after germination. It is extremely important at all times to keep rhododendron seedlings from sun scorching, and to begin with all seedpans should be covered with a pane of glass, which is turned occasionally to prevent drip, and also with a sheet of newspaper. The less direct light the pans get at this stage the better.

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To begin with, watering should be done from below by placing the seedpans in water and allowing it to percolate up through the pans. If the number of pans is large, this may be found a troublesome operation, so a very fine syringe may be used, care being taken to hold the syringe far enough away from the pan to allow the water to fall in a fine mist. If possible, the water should be about the temperature of the house and not drawn straight from the tap.

The temperature of the house is not so important; in fact, although slower, rhododendrons will germinate just as well in a cold frame, or even out of doors, if sown late in the spring. If seed is sown in the autumn, the pans should be kept in heat to give the seedlings a chance of making a growth before the winter sets in. It should be remembered, however, that the greater the heat of the house in which they germinate the longer cooling off they will require before they are planted outside. When damping off occurs, watering should be cut down and the affected part of the seedpan scraped with a knife, as damping is a definite disease and may spread to healthy seedlings. Prevention is better than cure, and provided the seed is sown thinly, the seedpan sheltered from draughts, and watering done with moderation and intelligence, damping need not be feared. Another danger, particularly when the seed is sown in the autumn, is that of moss growing up and choking the seedlings before they have had a fair start. This is partly preventible by keeping your pans scrupulously clean. If moss takes control of a seedpan, the only thing to do is to prick off at once, whatever the time of year may be.

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PRICKING OFF

There is no doubt that the sooner you prick off your seedlings the better chance they will have of making considerable growth during the same season. At the Royal Botanic Gardens at Edinburgh they sometimes throw away the tallest and largest seedlings of the first germination, as they say that seedlings which make a fuss of growing at the start run to wood and are the slowest to flower. Possibly those of the second germination make the sounder plants.

The late Sir Isaac Bailey Balfour used to say that theoretically the best way to grow rhododendrons was to sow seed in the actual ground where you wanted the plant to come to maturity. The moral is true, that the less seedlings are moved the better it is for them. In fact, although we may say that rhododendrons are easy to transplant with their masses of fibrous roots, they are not the better for being moved, unless faulty soil or other unhealthy conditions prevail. Particularly is this the case when plants are tiny, and this is why it is so important to use a sowing medium which will disintegrate freely when the seedlings are pricked off and thus lessen danger of injury to their hair-like roots.

Rhododendron seedlings are best pricked off into boxes or pans filled with the same medium as that used for sowing, or possibly a little fine loam may be added, if the compost is used. The prepared pans should be thoroughly soaked and then left to drain for an hour before use. As the plants have to remain in these boxes for several months, if not over the winter, just as much care must be taken to

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ensure sufficient drainage as in the case of the seed-pans. A good plan is to remove the bottom from a box and in place of the boards cover it with fine wire netting. On the netting is placed broken soft brick, then a thin layer of leaf mould, and finally the compost, or the peat litter. The wire netting ensures perfect drainage. Another plan is to cover the bottom with a tile with holes bored in it in place of the boards. In no case should a close-fitting wooden bottom be used, for this gets sodden and becomes a harbour for fungus and bacteria.

In the case of dwarf rhododendrons, like those of the *Lapponicum* series, the seedlings may be pricked off in small clumps of four to five plants. These are community plants, and the tiny clumps will form the nucleus of a community and still not be so crowded that there is danger of damping. All other rhododendrons, however small the seedling may be, should be pricked off individually. Seedlings must not be planted too deeply; rhododendrons are practically surface rooters.

As they may have to remain in the boxes for several months, you must allow plenty of room for growth and expansion; each row and each seedling should be at least two inches apart. By the time they have filled that space they are ready to plant outside.

It will be found in the seedpan that the roots are long for the size of the seedling, and it is of importance to ensure that these roots are replanted straight in the pricking-off box, and are not bent or curled round. Although not taproots in any sense of the word, yet these seedling roots are the centre of the future root system, and a great deal of the well-being of the plant

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rests on this seedling root. If it is broken or badly injured in removing it from the seedpan, the seedling may just as well be thrown away.

When seedlings are pricked off, they should be given a fair amount of water while making their growth. It is difficult to give any general rules, but with a little experience it will soon be seen when a plant is getting too little or too much water; if over watered the stem will begin to brown and ultimately rot. Whenever they stop growing, the amount of water should be cut down, and if it is found necessary to winter the plants in the pans, water should be reduced to a minimum during the winter months.

It is necessary also at this stage to guard against sun scorching. If the house is not supplied with outside blinds, sheets of newspaper should always be laid on the boxes during the heat of the day. At the same time they should be given plenty of air which can circulate around the boxes.

PROPAGATION

Rhododendrons are so easily raised from seed or by means of layers and cuttings that there is little excuse for a grafted plant. Practically every rhododendron can be propagated from layers, and as this method of propagation is only a matter of time, nothing need be said about it, except one point. If you have an old straggly plant of some fine form, or rare species or hybrid, it is better to use it completely for layering, and by laying it on its side make use of every branch and shoot. By this means you will get a stock of

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fine plants at the expense of one old one which will never be an ornament if left alone.

During the past year or two many trials have been taking place of striking rhododendron cuttings, and it has been discovered that far more of them are strikable than was imagined to be possible. It is, of course, true that the bigger the leaf the harder it is to get cuttings to strike, but even the largest leaved species are found to be amenable to treatment. The best kind of frame to use is that where the bed is actually lying in hot water, but where this is not practicable, bottom heat should always be employed. It is almost impossible to give rules as to when cuttings should be taken, but broadly speaking a shoot of half-ripened young wood with a heel of old should be used. It is a good plan to water with acid water. Either a teaspoonful of acetic acid to a gallon of water, or a few crystals of potassium permanganate in the water may be used.

Dwarf rhododendrons such as the *lapponicum*s flower so quickly from seed that no time is saved by taking cuttings, but all the *Triflorum* series, like *R. yunnanense* and *R. chartophyllum praecox*, and aromatic species, like *R. plebeium*, will be found particularly easy to strike. A little experience will soon teach you the time to take your cuttings and the size of shoot to use.

THE NURSERY

The nursery should invariably be made in the most sheltered part of the garden with considerable overhead shade. It is advisable to make the beds fairly narrow, so that they can be weeded from the path

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without disturbing the plants. They should be trenched to a depth of at least 18 inches or 2 feet and the soil thoroughly freed from roots, while the top surface should consist of half soil and half leaf mould. If the surrounding trees are shallow rooters, it is a good plan to keep the paths below the level of the beds, which will assist in keeping tree roots within bounds. It is also advisable to dig a trench around the beds at least once a year to cut any wandering tree roots. From my own experience I know how important it is that this should be carefully and methodically done. One elm root was overlooked when digging a trench around one of my nursery beds, and within six months over two basketfuls of living elm root had to be taken from 32 square feet of bed. The elm had quickly found out this small plot of ground from which it was easy to obtain food and moisture, and had been robbing my seedlings consistently of their nourishment.

Seedlings should not be planted out in the nursery before May, nor after the middle of August. The seedlings should certainly have lost their cotyledons and have grown away from the ground. This is particularly important later on in the year, as seedlings will not have a chance to raise themselves off the ground before autumn, and it is little puffs of cold damp air along the ground which cause so much damage in the seedling beds. Many of the bigger-leaved rhododendrons send out quite large leaves before the plant is away from the ground, but however healthy and strong they may look, I advise keeping such seedlings indoors until the following year.

It is better that the nursery beds have a water

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supply handy, for they should be watered daily during dry weather, but it is imperative that this be done in the evening; seedling foliage in a moist condition is particularly susceptible to sun-scorch. If daily watering is impossible, the beds should be well mulched so as to keep in the moisture. Watering is most important during the entire adolescence of the rhododendron. It is not sufficient to wait until the drought is established and then to water, for the surface will have become hard and the water will not soak into the ground. It is far better to water for a minute or two every day on which there is no rain, for the ground is still receptive of moisture.

Seedling beds must be kept thoroughly weeded, but in the autumn the leaves from the shade trees may be allowed to lie as they fall. The thicker the layer of dead leaves the better, for they act in the same way as snow and keep the seedlings dry and warm.

You will probably want the seedlings to remain in the nursery, without transplanting if possible, until you are ready to plant them in their final position. Here again, the dwarf rhododendrons, the *Lapponicum*s and the *Campylogynum*s, can be left in their little groups, but others must have sufficient space to grow for a year or more without interference. Shrubby species should be planted a foot apart, while big-leaved plants should never have less than 18 inches between them.

PLANTING

Although trenching is absolutely necessary, if your soil be stiff loam or clay, or if the ground be



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filled with roots or stones, yet if your soil be light, fairly clean, and entirely free from hard pan, trenching is not necessary. The lighter the soil the quicker the water is attracted towards the surface by capillary attraction, which assists the plant. This is one of the main reasons why trenching is necessary in heavy ground where there is no chance of capillary attraction.

If your plants have come from a distance or are old plants being transplanted, it is a good plan to loosen the ball of roots. All soil should be removed and the roots carefully teased out. If the ground is not trenched, holes at least three times the diameter of the root ball must be dug and the bottom of the hole worked with a pick to ensure good drainage. A shovelful or two of leaf mould is then thrown in, and in dry weather the hole is thoroughly soaked before planting the rhododendron. It is also important in hot or dry weather to keep the plants out of the ground as short a time as possible, so all preparations should be made before the plants are moved. Firm but not tight planting is essential. It is also a good plan to level the ground around each rhododendron, and if the ground falls away to make an embankment on the lower side. In this way the rhododendrons are planted in the middle of a saucer-shaped depression which can be filled with leaves. You are then certain that all water poured into the depression will reach the roots of the plant. This, of course, applies to light and medium soils: depressions in clay tend to become water-logged and should be avoided.

It must not be imagined that once the final planting is over all work on a rhododendron is

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automatically finished. It is on the yearly treatment that the well-being of a rhododendron really depends. If you are satisfied with a certain amount of flower on straggly, under-sized plants, then they may be left alone, but if you wish your plants to possess that indefinable look of well-being that goes with a plant at the height of condition, constant feeding is absolutely necessary. This is a lesson which even the most experienced of growers have only learnt in the last year or two. I cannot emphasise this point too much, for a great deal of that look of ill-health is only caused by starvation. It can easily be proved; if you have two sickly-looking plants side by side, dig up one, loosen the ball of roots, trench in a generous supply of leaf mould, replant it carefully in a basin, fill the basin with several inches of dry leaves which should be replenished as soon as they show signs of rotting into the soil, and in a year you cannot tell the two plants as being of the same species or variety.

Feed a rhododendron well and the trouble and time spent will be repaid a thousandfold.

Occasional disbudding will be found to be of advantage where a plant has flowered profusely for two years in succession, for in this way its strength will be conserved. This is particularly the case with *R. ciliatum*, *R. campylocarpum*, and the Triflorum series like *R. chartophyllum praecox*, *R. yunnanense*, and *R. Augustinii*. It will also be found that plants in ill-health will produce large quantities of flower buds; although a few may be left on the plant, yet the majority should be removed. In all cases it is better to pick off old flower heads and seed pods.

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Although pruning is not often necessary, yet the knife can be used freely on occasion when a plant is growing too straggly or some of the wood is dying.

DISEASES

Rhododendrons as a rule are particularly free from disease and from insect pests. The leaves, especially in the South of England, are often eaten by a beetle, but, although disfiguring, the plant is unharmed.

There is a fly, called the rhododendron fly (*Stephanitis rhododendri*), which attacks some kinds, particularly hybrids with Catawbiense blood in them. The leaf is discoloured by yellow spots on the upper surface, usually near the midrib, while on the under surface can be seen the black eggs of the fly. In a very bad case the leaves will fall off, but usually the plant seems to be little the worse. The fly is apparently only able to fly under certain conditions and then only a short distance, so it is usually possible to confine it to one clump in your garden. The under surface of the leaves may be syringed with a solution of soft soap and water during late April or May, or, if possible, they should be sponged with the solution.

Probably the worst injury to which certain kinds of rhododendrons are addicted is bark-splitting. This occurs usually on main stems, and is often caused by frosting when the sap is in full flow: it is analogous to a burst water-pipe. It does not appear to occur in dwarf or scrub species, but is prevalent in the Fortunei series, *R. decorum*, *R. discolor*, *R. calophytum*, etc. If bark-splitting is severe, it will kill the plant, but if it is noticed in its early stages it can

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be checked and sometimes cured. I find that the best method is to plaster the wound with vaseline and then bandage it with common tow, taking in several inches of the stem above and below the split. This bandage should be left on for at least a year. It will often prevent the split from enlarging, and in some cases the wound will close up and heal.

It will be noticed that sometimes a leader or side shoot dies and the leaves fall off. This almost invariably takes place on a second growth which has sprung into being late on in the season and has grown fast without having had time to ripen its wood. This is particularly noticeable in a spring following a wet autumn. The dead shoot can be cut away, and the plant is little the worse.

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CHAPTER IV

RHODODENDRON SPECIES

IN this chapter I have given brief descriptions and notes of all rhododendron species which are in commerce or likely to be obtainable from nurserymen within the next year or so. Frankly I have a decided preference for rhododendron species compared with most hybrids. Many people, who are far better gardeners than I shall ever be, flatly disagree with me; they bring arguments to bear which appear to be overwhelming, but I only shake my head, for I have seen species growing in their native homes in Java, Ceylon, Burma, and China, and I know that in the wild they present pictures which home-raised hybrids can never equal. Whether many species are going to prove themselves adaptable to our conditions remains to be seen, but some of them have only been in this country a year or two and they must have their chance. Having seen what I have seen, I have become stubborn and pig-headed upon this question of species *v.* hybrids, but in part proof of what I state may I ask you to turn to one of the illustrations in this volume, that of *R. fctolacteum*. This photograph was taken by Mr. George Forrest in China, and the magnificence of the plants may be gauged by the man by the side of the trees. Can any row of hybrids give us such a picture? I doubt it.

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It will be noticed that rhododendron species have been divided into series, and this is a great aid to simplicity of identification. With a little practice it is surprising how easily most species fall into well-defined groups. Usually the treatment necessary is the same for all species in one series, and so in time you will be able to place an unnamed rhododendron in a certain series and be able to give it the situation and treatment suitable for that series.

To begin with, I have grouped the different series together as follows:

1. Series which consist of rhododendrons growing in tree form, usually with large leaves and flowers carried in compact trusses.

Arboreum, Barbatum, Falconeri, Grande.

2. Large shrubs which, under certain conditions, may form tree-like growth. The leaves vary in size.

Campanulatum, Catawbiense, Cinnabarinum, Fortunei, Irroratum, Lacteum, Niveum.

3. Medium-sized shrubs with leaves varying in size.

Campylocarpum, Davidii, Heliopsis, Maddeni, Selsenense, Taliense, Thomsoni, Triflorum.

4. Small shrubs with leaves varying in size.

Dauricum, Edgeworthii, Lepidotum, Nerii-florum, Trichocladum.

5. Dwarf shrubs with small leaves.

Anthopogon, Campylogynum, Cephelanthum, Ferrugineum, Lapponicum, Saluenense.

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It is extremely difficult even to approximate the time of flowering in this country. Cornwall is at least six weeks earlier than the east coast of Scotland, but I have tried to give an average.

ANTHOPOGON SERIES

R. anthopogon (D. Don). First discovered by Wallich in north-west Himalayas, it has since been found to extend along the entire range. It is a low compact shrub about 18 inches in height. The leaves are about an inch long, oval, and covered on the under surface with scales. The flowers are flat and carried in loose terminal clusters. The colour varies from white to pink. It flowers in April.

R. anthopogon has long been cultivated in rock gardens. It is quite hardy, although not very showy. The colour variation in the flowers is great. For notes on general cultivation see the Lapponicum series.

ARBOREUM SERIES

R. arboreum (Smith). As one of the earliest rhododendrons to be introduced from the East, and as a parent of many of our hardy hybrids, we owe a great deal to *R. arboreum*, but I should advise no one, unless they live in the west, to grow it, for it is not really hardy. Every now and then a new form appears which is said to be of a hardy strain, but although it may linger on for years a stunted and unhealthy-looking plant, sooner or later it will be caught by a heavy spring frost and will give up the struggle. It is only a feeling of sentiment that makes those of

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us who are not lucky enough to live in the west attempt its cultivation in our gardens. It is true that Sir Joseph Hooker once said that *R. arboreum* grew in Cornwall with greater luxuriance than in its native Himalayas, but Cornwall is not the rest of England. If sentiment is so strong that you feel that this rhododendron must be grown, I should suggest variety *kermisinum*, with brilliant scarlet flowers, and variety *Sir Charles Lemon*, which is pure white in colour. They should be given the most sheltered place in the garden, with abundance of moisture and food. I am growing strong healthy-looking seedlings of the Ceylon form, called *R. zeylanicum*, but although they now show every sign of being hardy, I know that soon a time will come when they will refuse to move and grow old prematurely. This premature ageing seems to be a peculiarity of some Himalayan rhododendrons; it might be called rhododendron rickets.

BARBATUM SERIES

R. barbatum (Wallich). One of the finest of the old Himalayan species and type member of a series which is noted for the bristles on the leaf stalks. Although it becomes a tree in the Himalayas, in this country it rarely grows more than 20 feet high. The leaves are heart-shaped at the base and taper to a point. The flowers are fourteen to seventeen in number and are carried in a tight truss. The corolla is bell-shaped. In its best forms the flowers are a brilliant crimson. It is one of the most variable of rhododendrons, not only in its flowers but also in its bristly character, some forms being quite smooth, and others,

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like *R. Smithii*, being completely hirsute in appearance.

Care should be taken over the selection of this plant, as the colour varies considerably in brilliance. Although hardy, it has a disadvantage, for in mild seasons it flowers early in March and the flowers are often cut by the frost. It is one of those rhododendrons I should advise for a late garden, for there the growth will be retarded to a more suitable time of year. It is worth buying plants of *R. barbatum* of considerable size, as it rarely flowers until after its twelfth year.

R. glischrum (Balfour and Smith). Originally found by Forrest on the Yangtze-Mekong divide in 1914. A small tree or large shrub up to 25 feet high. The leaves are oblanceolate and large, up to 8 inches long. They are fringed with hairs. The young shoots are sticky. The flowers are carried about ten in a cluster. They are funnel-shaped and are rose-pink in colour with a crimson blotch.

Coming from this area the plant is absolutely hardy. It is very handsome in growth with its large narrow-pointed leaves, and is valuable for its foliage alone. It requires a certain amount of shade, but is not so exacting about moisture as many rhododendrons of its size. Large plants are not yet known in cultivation, but there appears to be every prospect of its being one of the best members of the large shrub or small tree class in this country. At first Forrest only found it in fruit with a few withered flowers attached; at one time it was thought to be a yellow-flowered species, which unfortunately it is not. He afterwards found it in flower and described it as a most beautiful shade of rose.

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R. habrotrichum (Balfour and Smith). Found by Forrest in 1912 on the Shweli-Salween divide. A shrub of 5 to 8 feet. Leaves oblong, tapering to a point, fairly large up to 5 inches long, rather thick in texture. Dark green above fringed with hairs, and claret-coloured below. The flowers are pale rose varying to pink-magenta. They are born in a tight truss and the corolla is funnel-shaped. The young branches are densely hairy and the buds are sticky.

The flowers are rather variable in colour; some forms are dingy and unpleasing, while others, although pale, have a very clear tone. As it comes from a monsoon area, it requires moisture, and I do not think this plant is going to be so satisfactory as its near relation, *R. glischrum*. Its stubby pointed leaves and its firm growth are attractive. Although Forrest found no plants higher than 10 feet, it has the appearance of a larger plant; it is not a wide-spreading shrub, and its compact growth and curious appearance deserve a situation in the foreground. So far I have rarely seen this species cut by spring frosts.

Another large shrub in the same series is *R. pachytrichum* (Franchet), which was introduced by Wilson from western Szechuan. The flowers are more waxy in texture and are white with a crimson blotch, while the leaves are narrower. It flowers in late April. It will prove a valuable addition for a cold garden where its growth is retarded, which makes it less liable to spring frosting. It requires the same treatment as the rest of the series.

R. strigillosum (Franchet) is yet another relation, with narrow leaves and waxy bell-shaped flowers

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carried in a loose truss. The colour varies from rich crimson to a moderate pink.

In its best forms it is a marvellous plant, but care should be taken over its selection. As it flowers early, it is liable to have its flowers cut, so it should be given a sheltered position. I find that it is not a particularly good plant with me in Scotland. Although Wilson found it as a small tree 20 feet high in Szechuan, it is doubtful if it will reach those proportions in cultivation. Most of the plants I have seen were bushy and compact. The colour in its good forms is so pure that it is easy to place. It goes excellently along with *R. campylocarpum*.

CAMPANULATUM SERIES

R. brachycarpum (Don). A widely distributed Japanese species which grows to a shrub about 10 feet high. Its leaves are shiny on the top, while the under surface is slightly felted. The flowers of the original importations were white flushed with pink, but I believe that a form is now coming into cultivation with cream-coloured flowers.

It is one of the few Oriental rhododendrons which will grow in the eastern United States and is absolutely hardy. Although rather slow growing, *R. brachycarpum* is worth growing, particularly in the colder parts of the country, as it is robust and healthy-looking and can take the place of laurels in many gardens. It flowers in June. It is also closely allied to *R. catawbiense*.

R. campanulatum (Don). One of the oldest Himalayan species in cultivation and one of the most variable. In this country it will grow up to 30 feet.

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Its leaves are obovate and are covered on the under surface with a thin reddish-brown tomentum, which in some forms disappears as the leaves get older. The flowers are campanulate in shape and range in colour from almost pure white to a muddy colour, euphemistically called rose-lilac; in other words, a poor washy magenta.

This variation in colour makes it a difficult task to give advice upon this plant. Although in its best forms it is one of the finest rhododendrons in cultivation, yet on the other side of the scale it is hardly worth having in the garden. The colour does not always come true from seed, and it should be propagated by layering. There is a fine form at Leonardslee of the palest lilac imaginable, and another, darker in colour, at Ardgowan in Scotland with a thick tomentum, but most of the plants in commerce have to be selected with caution. It is perfectly hardy and will stand a certain amount of sun. If it was not for its variation in colour, I should place this species very high on my list. It flowers in April.

It has a close relation, *R. æruginosum* (Hooker), which is well worth planting owing to its unique foliage. It does not grow so large as *R. campanulatum*, but its foliage has a bluey tinge and the young growths are a bright bronze-blue, which is most effective. It rarely flowers well in this country, and the only attraction it has is its foliage.

R. lanatum (Hooker). Introduced in 1851 from Sikkim. In this country it rarely grows more than 6 feet high, although in the Himalayas it is found as a small tree. The leaves are obovate, with the under surface covered with a thick tawny indumentum.

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The flowers are born six to ten in a truss in May. The corolla is broadly campanulate and a clear yellow in colour, with red dots on the upper lobes.

Although hardy, this plant has a peculiar constitution. In some places, even in Cornwall, it is not a good grower, while in other situations it seems to thrive. I think a great deal of this difficulty arises from the state of the plant at the time it comes into your collection. It is one of the Himalayan species which under unfavourable conditions grows old at an early age; it seems to hang on and remain in a comatose condition from which it is extremely difficult to move. It is always better to buy seedlings than grown plants, as it does not seem to take kindly to moving. As a rule it appears to collect all the lichen in the neighbourhood, and when it is in that state I find that transplanting is dangerous. It is so attractive that it is worth a trial to see if it thrives.

CAMPYLOCARPUM SERIES

R. callimorphum (Balfour and Smith). Found by Forrest in 1913 on the Shweli-Salween divide as a typical scrub rhododendron. Its nearest relation is *R. Souliei*, but in this country its growth is more compact than that of the latter. Its limit of size is about 6 feet, and altogether it has a neat appearance with its round leaves about 2 inches in length. The upper surface of the leaves of *R. Souliei* is also more glaucous than that of *R. callimorphum*. In both plants the flowers are rose-coloured and bell-shaped.

R. callimorphum is a very useful plant, as it comes into growth last of all the Campylocarpum series.

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A good arrangement is to plant *R. campylocarpum*, *R. Souliei*, and *R. callimorphum* together, as the last is slower in growth than the other two. As it is always compact in habit, it should be planted in the foreground with the other two behind it.

R. Souliei (Franchet) was introduced by Wilson from western Szechuan, and has almost orbicular leaves about 3 inches in length. It makes a very shapely bush, and I class it high in rhododendrons. It grows better on the east coast than on the west, and flowers in May.

R. campylocarpum (Hooker). One of Hooker's original importations from Sikkim, and probably the best yellow-flowered species in general cultivation. It has the usual oval leaves of the series. It was first introduced in 1851. It will reach about 8 feet in height, and its bell-shaped flowers are born on a loose truss in April-May.

Although absolutely hardy, it is not one of the easiest of rhododendrons to cultivate successfully. Like several others of its series it grows better in the centre of the country and on the east coast than in the west, where it produces flowers in such profusion that its strength is rapidly sapped, and where it also quickly becomes leggy and grows out of hand. As long as it is partially sheltered from the wind it prefers a fairly open situation and it responds freely to careful cultivation. The more freely it flowers the more nourishment it requires; in fact, every year it should not only have a good mulching of leaf mould, but also a dressing of well-rotted cow manure.

It is a particularly stable rhododendron both as regards growth and colour, but there are two distinct

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forms, both of equal value in the garden. The one, the original importation, is of the ordinary shrub type which grows freely and boldly and has flowers of a pale yellow; the other is of a much more compact and tight form of growth and the yellow is of a distinctly deeper shade.

R. croceum (Balfour and Smith). Found by Forrest in the Yangtze bend in 1913. A rather large member of the series growing up to 20 feet. It has oval leaves and bell-shaped flowers of a very pure clear yellow, shaded at the base inside with a faint flush of crimson.

It is not a particularly fast grower, but coming from a dry area it is perfectly hardy. It has a near relation from the moister Salween-Mekong divide, *R. Wardii* (Smith), which is also in cultivation. It is just as lovely, but coming from a moister climate it may not prove quite so hardy. The latter flowered at the Royal Botanic Gardens, Edinburgh, last year and was a lovely thing, a nodding yellow bell about 2 inches in diameter, as delicate and translucent as the finest porcelain.

R. puralbum (Balfour and Smith). A very fine member of the series coming from north-east Yunnan and introduced by Forrest in 1913. It is a shrub of 12 to 15 feet, with pure white bowl-shaped flowers. It is apparently going to be successful in our gardens.

R. Williamsianum (Rehder and Wilson). This is the most distinct rhododendron in the series, and was found by Wilson in western Szechuan. Even a full-grown plant will not exceed 5 feet in height, but it will be far larger in diameter. It is very twiggy and bushy, with small egg-shaped leaves. The

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flowers are open, bell-shaped, and pure rose in colour.

This charming rhododendron is placed very high in my list. It is perfectly hardy and flowers in May. Its rather flat and dwarf appearance makes it suitable for a sheltered corner of the rock garden or on the edge of a stream. It is very easy to strike from cuttings and is really an invaluable plant.

CAMPYLOGYNUM SERIES

R. Geneſterianum (Forrest). Found by Forrest on the Nmai'hka-Salween divide at 11,500 feet in 1919. This is a charming plant which grows to a height of 4 to 6 feet in its native habitat. The leaves are thin and large for the size of the plant; they are pale green in colour and are glabrous. The flowers are shaped like a campanula and are plum-purple in colour with a glaucous bloom. They are born three to four in a truss and stand well above the leaves.

This rhododendron is not quite so hardy as it might be, and sometimes suffers severely in the early spring frosts. This is not to be wondered at, as it comes from the middle of the monsoon area. It should be grown in a position where it starts into growth as late as possible, and on no account should it get the morning sun. Its main requirements are shelter from spring frosts and a damp atmosphere.

R. myrtilloides (Balfour and Ward). Introduced by Farrer in 1919 from Upper Burma under numbers 1046 and 1046A. A dwarf shrub of 3 to 6 inches. The flowers are solitary, waxy in texture,



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R. SPHÆRANTHUM IN ITS NATIVE HABITAT.

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with a deep plum-like bloom outside, and inside of a mahogany red; there is another form which is a vivid claret colour throughout.

This plant is still scarce in cultivation owing to its late introduction; as, however, it is easy to propagate and to raise from seed, it will soon be obtainable. To my mind it is one of the finest of all dwarf rhododendrons. The flowers are firm, like a miniature *Thomsoni* in shape and texture, and altogether it makes a brave showing. It appears to be quite hardy and should be an excellent plant for the rock garden, where its roots can be kept cool and where it can get a certain amount of shade. It should not object to wind. The type member of the series, *R. campylogynum*, originally found by Delavay, is also in cultivation, but is so far very scarce. It is similar to *R. myrtilloides*, with mahogany-coloured balls.

Two other members of this useful and charming series of dwarfs are *R. brachyanthum* (Franchet), with yellowish flowers tinged with green, and *R. aureum* (Franchet), with golden-yellow flowers. The flowers of both these species are widely campanulate. *R. brachyanthum* is hardy, but so far *R. aureum* has proved to be rather tender. Forrest has lately re-introduced it, and it may prove hardy, for it is a lovely thing.

CATAWBIENSE SERIES

R. maximum (Linnaeus). The second rhododendron to be introduced into England. Seed was sent to England from North America in 1736. In the United States it has the local names of Great Laurel and Rose Bay. A bushy tree of 30 to 40 feet.

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The leaves are dark green on the upper surface and paler below, and are long and pointed. The flowers are born sixteen to twenty-four in clusters and are purple-rose to white in colour.

Although perfectly hardy, I should not include this rhododendron in my list, if it was not already in fairly general cultivation. It might properly be called a useful evergreen, but that is all. The young growths come out at the same time as the flowers in July. Mr. Millais calls it a vigorous grower, but I find that the seedlings are slow and that it does not flower until it is of some size.

CEPHALANTHUM SERIES

R. ledoides (Balfour and Smith). Found by Forrest in the Yangtze bend in 1913 at an altitude of 13,000 feet. A shrub of 2 feet. The leaves are small, thick, and leathery. The flowers are like those of a daphne, tubes carried in a thick cluster, and are white flushed with rose.

This attractive species will rapidly become popular in gardens. It is very floriferous, although rather slow in growth. It is quite hardy, and with its thick heads of flowers it has an appearance different from other dwarf rhododendrons. It will grow best either in a cool position on the banks of a stream or in a sheltered corner of the rock garden, where its roots can be kept fairly moist. It flowers in late April or early May.

R. sphaeranthum (Balfour and Smith). Found by Forrest in north-west Yunnan in 1914. A twiggy shrub about 2 to 3 feet high. Leaves small, thick

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and aromatic. Flowers like a daphne, crowded on the terminal branches; rose or white in colour. In May.

A fascinating rhododendron, but one that will on no account stand drought. For that reason it should not be planted in the rock garden, unless in a locality where the drainage is good and yet it can get sufficient moisture. I find it a difficult subject to move when large, although I have no reason to suppose that young plants will not travel satisfactorily. A good place to plant it is by the side of a stream or on a cool bank near water. Another lovely species in this series is *R. Sargentianum* (Rehder and Wilson), with flowers either white or pale yellow. It is quite hardy.

CINNABARINUM SERIES

R. cinnabarinum (Hooker). Introduced by Sir Joseph Hooker from the Himalayas in 1851. It is a large shrub growing up to 16 feet with long straight slender branches. The leaves are oval and glaucous, with a peculiar metallic lustre. The flowers are long and funnel-shaped like a *Lapageria*. They come out usually in June. There are three varieties as regards colour: *cinnabarinum*, a dull cinnabar red; *cinnabarinum* var. *Roylei*, with more crimson in its tone and a peculiar velvety bloom; *cinnabarinum* var. *Blanfordiaeflorum*, with the corolla orange outside and a greenish-yellow inside. The best form is certainly var. *Roylei*; its glossy glaucous foliage, and flowers waxy in texture, are very attractive. The first two forms are sometimes found on one bush.

Like other glaucous-foliaged rhododendrons it will stand a certain amount of sun; in fact, if it is too

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much in the shade it will announce the fact by shedding its leaves. Owing to its colour it is a difficult plant to place; probably its best neighbours are those of a rich crimson colour like *R. Thomsoni*, although on the whole I think it should be planted in a position by itself, or with plants of another family like *Camellia cuspidata* or *Magnolia salicifolia*.

R. Keysii (Nuttall). Introduced from Bhutan in 1851. A shrub of 12 feet or more. The leaves are oval, tapering at both ends, green above and glaucous beneath. The corolla is tubular and brick-red in colour. The flowers are born five to six in a flat cluster.

The period of flowering varies in this species from April to June. It grows best either in the west or in a cold garden where the growth is retarded to a reasonable time of year, when danger from frost is more or less past. Unlike its relative *R. cinnabarinum*, it must have a certain amount of shade, and grows best in situations suitable for *R. Falconeri*. It is a peculiar-looking plant and the flowers are unlike those of other rhododendrons, but the colour is brilliant.

DAVIDII SERIES

R. haematocheilum (Craib). Discovered by Wilson in north-west Szechuan in 1904. A rather lanky shrub of 7 to 10 feet with smooth oblong leaves rounded at the base. Flowers eight to ten in a rounded truss, broadly campanulate. The colour is carmine, fading to a much paler colour, while the colour of the buds is particularly vivid.

Mr. Millais calls this species "almost hardy," but

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I have never found that it suffered from our climate. It flowers in late April, and the only danger is that of the flowers being caught by a heavy spring frost. Mr. Wilson couples this plant with *R. oreodoxa* (Franchet), a member of the same series from the same neighbourhood. Although so-called *oreodoxa* is common in cultivation, there is grave doubt of its being the true plant. It appears to be particularly loose in character, with a habit of crossing with anything in sight; owing to its great variability I should not advise its purchase. *R. haematocheilum*, on the other hand, is quite stable, and, although inclined to be straggly, is a handsome plant. It is useful for planting in conjunction with yellow members of the Triflorum series like *R. ambiguum* and *R. lutescens*.

Another rhododendron with only slight botanical differences is *R. Davidii* (Franchet), the type member of the series. It comes from Szechuan. The flowers vary from pink to lilac-purple, spotted on the upper side with dark purple. It is rather a slow grower though perfectly hardy, and flowers in late April.

R. maculiferum (Franchet). Discovered by the Abbé Farges in Szechuan and introduced in 1901 by Wilson. A medium-sized shrub. Leaves elliptic and rounded at the base. Flowers seven to ten. Corolla bell-shaped; colour varies from pink, through pale purple to white with crimson spots.

This is a fairly useful plant, particularly in the white form. Like *R. oreodoxa*, a near relative, it requires moderate shade. As it is floriferous and inclined to be straggling, it should be planted in small clumps with about 6 feet between each plant.

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DAURICUM SERIES

R. moupinense (Franchet). Originally found by Père David in western Szechuan, it was introduced in 1903 by Wilson from Mount Omei, where he found it growing either on trees or among rocks. It is a dwarf shrub about $2\frac{1}{2}$ feet high. The leaves are thick and nearly egg-shaped, coming to a point at the apex. The flowers are large for the size of the plant. The corolla is broadly funnel-shaped about $2\frac{1}{2}$ inches in diameter; the colour is white with red spots; the buds are rose-coloured.

This is a valuable plant in a sheltered position. Although perfectly hardy it is an early flowerer, and as such is liable to be cut. According to the season it will flower in February or March, and even occasionally in January. It may be grown either in a wood or in a sheltered position in the rock garden. In a wood it looks well with a background of some large dark green leaved rhododendrons. This is another of these rhododendrons which may also be given a certain amount of exposure, in which case they form flat thickets and come into bloom considerably later in the year. Probably in the north and east this is the best way of growing them.

R. mucronulatum (Turcz). A semi-deciduous shrub up to 6 feet, introduced from Japan in 1907. The leaves are lanceolate, while the flowers are usually single and of a reddish-purple; the corolla is platter-shaped.

This is an exceedingly useful species; it flowers in January or February and the flowers will stand several degrees of frost without damage. The colour is pleasant and rich for the time of year. It should always be

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grown in a clump, the plants being set about 3 feet apart. If you have *R. moupinense*, which belongs to the same series and flowers about the same time, it is a good plan to plant them fairly close together. In that way you can get a large mass of colour during the most unbecoming months.

R. racemosum (Franchet). Originally found by Père Delavay in 1883, it has been introduced many times into this country. A small shrub, 2 to 3 feet, with obovate leaves dark green above and glaucous beneath. Flowers in terminal clusters; corolla widely campanulate. Pink in colour.

This useful shrub has long been popular in our rock gardens, but has lately been exceeded in popularity by another very close relative called *R. oleifolium* (Franchet). This plant is actually only a form of *R. racemosum*, as true *R. oleifolium* is quite distinct, having single flowers alternating up the stem. It is rare in cultivation. This so-called *oleifolium*, however, will probably give way very soon to a new form of *R. racemosum* which Forrest found in 1920 and of which he speaks very highly; the flowers are larger and the colour better. It is one of the easiest rhododendrons to propagate and to grow, and for this reason has been extensively used in rock gardens. On the whole it is better seen in a mass on a slightly shaded bank or bed, when it will soon grow into a thicket which will be a joy to any garden.

In China it is found by the thousand on scrubby hillsides, and there is no doubt that this form of planting will become popular in this country. There are many rough slopes which would be vastly improved by planting *R. racemosum* in bulk.

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It is often a mistake to ignore a rhododendron because it is not showy when planted singly; some thought should always be given about its effect when planted in a mass. *R. racemosum* is a typical case.

EDGEWORTHII SERIES

R. bullatum (Franchet). A shrub 4 feet high; leaves ovate-lanceolate, rough and heavily veined above and felted below with tawny hairs. Flowers three to six in a cluster, bell-shaped, fleshy in texture, white tinged with yellow at the base, sweetly scented.

R. bullatum is a common rhododendron in Upper Burma and Yunnan and is very lovely. Although, from the area in which it is found and from the appearance of the plant, it would be imagined that it was delicate, this is not the case. It stands our east coast climate far better than many so-called hardy rhododendrons. It is found either on rocks or perched in the forks of trees. It requires shade and a good mulching of leaves to keep the soil cool and damp. It does not seem to be particular about its situation in its native home, for I have seen a big bush of it on the top of a 12-foot boulder where the amount of soil was negligible.

There is a relation of *R. bullatum* called *R. Wiltonii*, discovered by Wilson in Moupin in 1904, which has also proved itself hardy. It forms a shrub of 5 to 7 feet, with pink flowers, spotted with crimson.

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FALCONERI SERIES

R. Falconeri (Hooker). Introduced into this country in the middle of last century from Sikkim. The type member of its series and among the finest of all rhododendrons. In this country plants are already known 25 feet high, and there seems little doubt that they will grow even larger, although they may never equal the tree of 40 to 50 feet found in the Himalayas. The leaves are oval, up to 12 inches long, smooth on the upper surface, with the under surface covered with a thick rust-coloured felt. The flowers are bell-shaped and are 2 inches in diameter, creamy-white with a deep crimson blotch at the base; they are born on tight trusses in April or May.

This large-leaved rhododendron is so well known that a description is perhaps superfluous, but some notes on its cultivation may be of assistance. It grows fairly well on the east coast of Scotland. It is certainly magnificent in Cornwall and on the west coast of Scotland, but the danger zone with a plant of this type is a climate which is warm enough in the first few months of the year to start the sap into circulation, which it is only too ready to do, and then havoc is caused to its flowers by a series of spring frosts; winter frost does not affect it at all. It should be planted in a position where it is sheltered from all wind and where the full strength of the sun cannot reach it. In time of drought it must always be kept well supplied with water, and it is necessary to top dress it every year with large amounts of leaf mould mixed with a little well-rotted cow manure.

There is a Chinese form of *R. Falconeri* called

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R. sino-Falconeri (Balfour), which is not yet in cultivation. There is also a very close ally called *R. eximeum* (Nuttall), which is a very rare plant although introduced many years ago. The latter differs in having rose-pink flowers and slightly smaller leaves. This plant has proved itself to be as hardy, if not hardier, than *R. Falconeri*.

R. fitchii (Balfour). A tree up to 25 feet high. The leaves are long and obovate, coming to a small tip at the apex; dark green and smooth above, with the under surface covered with a reddy-brown indumentum, not so thick as that of *R. Falconeri*. The flowers are pure white with a crimson blotch and are born on a fairly tight truss.

It flowers in late April. This fine rhododendron is worthy of one of the best situations in the garden. Like *R. Falconeri* it must be sheltered from the wind and the roots kept cool and moist, but not so much care or attention is necessary as in the case of the type species.

A word of warning must be given here over the nomenclature of this plant. It was originally sent out as *R. laetum* (Franchet), to which it bears no resemblance. True, *R. laetum* is also in cultivation, but is an exceedingly difficult plant to grow and is not in commerce; it has yellow flowers and the leaves are oblong-ovate. Some nurserymen are not aware of the muddle over the names, and where *R. laetum* is seen in their catalogues it almost invariably refers to *R. fitchii*.

R. galacelinum (Balfour). Found by Wilson in western Szechuan at 9-10,000 feet in 1910. This rhododendron was also collected under the name of

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R. laetum, but differs from it entirely. It is a relative of *R. fictolaetum*, but the leaves are smaller and the indumentum on the under surface of the leaves is not so thick. The flowers are pinkish to white.

This is one of those unfortunate species which make a poor showing the first time it flowers, as its appearance is not striking until the plant is in full flowering condition. It is slow in growth but is hardy. I have seen it planted in very thin shade and it appeared to be perfectly at home.

R. Hodgsoni (Hooker). Discovered by Griffith in Bhutan in 1837 and introduced by Hooker in 1848 from Sikkim. A large shrub or small tree up to 20 feet. Leaves large, thick, and coriaceous. The colour is a dark glossy green above, with brown-tinged tomentum on the under surface. Flowers bell-shaped, carried in tight trusses, rose-lilac in colour.

This is probably the hardiest of all the big-leaved rhododendrons, although it comes from the Himalayas. I have never seen it damaged by frost, unless it be a few touched flowers at the very end of April, and it will stand more drought than many smaller species. Even moderate wind does not do much damage, for the leaves are tough and the growth sturdy. On the other hand, it requires shade. The flowers vary considerably in colour but the foliage is particularly handsome, and the plant is worth including in a collection for that alone. Although not generally popular, I place *R. Hodgsoni* very high in the list of species. Like so many of these large rhododendrons, the plants which you buy must be in good condition, otherwise they transplant badly.

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The colour is rather difficult to place; probably the best rhododendrons to grow with it are *R. calophytum* and *R. sutchuenense*. Pure scarlet in its neighbours should be avoided.

FERRUGINEUM SERIES

R. ferrugineum (Linnaeus). The European "Alpine Rose." A compact shrub growing as much as 4 feet in height, with rose-coloured flowers. This is one of the oldest rhododendrons in cultivation, and is said to have been introduced into this country as early as the middle of the eighteenth century. It grows successfully in areas where the soil and climate are not too dry. Certainly many species from the East are of better quality than *R. ferrugineum* both in growth and in flower, but there is a satisfaction to those who have come upon acre after acre of it in the Alps in seeing it in their own gardens. There is an association interest in plants which goes deeper than mere beauty, and to those who know their Switzerland this plant should have a wide appeal.

Although some individual plants in this country have grown to a great size, it is better on the whole to treat it as a community plant and grow it in the mass. It will flourish in any corner of the rock garden where it is not in full sun and where its roots can be kept cool and moist.

R. hirsutum (Linnaeus). Although this is supposed to be the first rhododendron introduced into England, as long ago as 1656, it has never been a really satisfactory plant in our gardens. For one thing it sneers at our climate and has a bad habit of dying at the first

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sniff of drought; it is also extremely variable in its forms. All the troubles which face the dwarf rhododendrons from the East seem intensified in the case of *R. hirsutum*, and it is such a difficult subject to grow really successfully that it is hardly worth attempting. The flowers are smaller than those of *R. ferrugineum* and centre round the roses and pinks. If you are fortunate enough to possess a place which is moist in summer and dry in winter it is worth growing, but there are many more accommodating and better dwarf species.

FORTUNEI SERIES

R. auriculatum (Hemsley). Originally found by Henry, the seed was introduced by Wilson. Its home is in Hupeh, but even there it is never a common plant. It is a bush up to 10 feet high and as much as 10 feet through. Its leaves are smooth on the upper surface, oblong, and tough in texture; in favoured positions they are as much as 12 inches long. The flowers are large and narrowly bell-shaped, sweet scented, and white, and are born six to eight in a bunch. Wilson speaks of a pink form, which I have not yet seen in cultivation.

This rhododendron is one of the finest introductions from China, and it has one great advantage: its growth does not begin until July, when danger from frost is past. It does not flower until August, when flowering shrubs are far from common. A word of warning, however, should be given over this question of late growth. In the south and west it is grown in considerable shade and is perfectly amenable to such treatment; in fact it is a necessity. But the

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further north it is grown the later it starts into growth, when there is a danger of its young shoots being cut by the autumn frosts. In Perthshire I began by giving it the same treatment which is so successful in the south, but with dire results. One plant made no growth at all, while another was badly cut by October frosts. My plants, with a judicious mixture of sunlight and shade, have now completely recovered. The only care necessary is that at all times the soil around the roots should be covered with leaves to keep the roots cool and moist. It is such an acquisition to our gardens that it is worth taking trouble over its cultivation.

R. calophytum (Franchet). Originally introduced into Europe by the Abbé David from Moupin in Tibet, most of the plants in this country come from seed collected in western Szechuan by Wilson. Without a doubt this is one of the finest of all rhododendrons. It has the typical long tapering leaves of the series, and yet is always easily distinguishable, for the leaves are more closely packed than in any other member of the series and form what are almost rosettes. The flowers are large and bell-shaped, white with a crimson blotch at the base, while there is also a pink form; both are of equal beauty. They are carried, sometimes as many as thirty on a truss. It flowers in late April and early May. The largest bushes in this country are about 12 feet high and more in diameter, but in Szechuan it grows to a height of 40 feet. It is perfectly hardy throughout the British Isles.

This description is meagre and gives little idea of the charms of this wonderful plant. Absence of floppiness is one of the greatest of them. It is not

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exacting over its situation; any good rhododendron ground suits it as long as it is in half-shade and its roots are not allowed to get dry.

R. decorum (Franchet). This is one of the most widely distributed of all Chinese rhododendrons, and was originally found by Abbé David in south-eastern Tibet. The leaves are 7 or 8 inches long and rounded at the apex. The flowers are thick and waxy in texture and are white, occasionally flushed with pale pink. It is rather difficult to say how large this plant will grow in this country. I have seen a variety in China over 20 feet high, but so far 15 feet is the limit in the south of England.

This is an exceedingly useful plant, even more so than its more famous relative *R. Fortunei*, for its wide distribution in China gives it a number of varieties only differing in time of flowering. If possible, those should be chosen which flower in the late summer or early autumn when flowering shrubs are rare. The three allied species of *R. Fortunei*, *R. decorum*, and *R. discolor* are useful for separating more highly coloured species. As they are easily grown from seed, they make useful hedge plants; they trim well, and are fast growers. Care should be taken that late-growing varieties of *R. decorum* and *R. discolor* are planted in fairly open positions in the east and north, else the young growths may be cut by the autumn frosts, as in the case of *R. auriculatum*. The flowers of *R. decorum* are sweetly scented.

Both *R. decorum* and *R. discolor* are much addicted to bark-splitting. There is little doubt that this is caused by a combination of sun and frost. This injury is usually intensified if the plants are coddled.

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I find that they will stand rigorous treatment better than many species. Although the growth is far slower with rigorous treatment, they are not so liable to bark-splitting.

R. discolor (Franchet). The leaves are large in the young plant, often reaching 10 inches in length and growing smaller as the plant ages. They taper equally at both ends, and thus the plant is easily distinguishable from *R. decorum*. The leaf buds are covered with red scales and the leaves are very tender when young, so the plant is susceptible to late summer frosts and sunburn. The flowers are almost invariably white, and in the best forms are 3 inches long and 5 inches across.

This is another magnificent rhododendron with an even larger and finer flower than that of *R. decorum*. It should be grown in every garden.

For other notes see *R. decorum*.

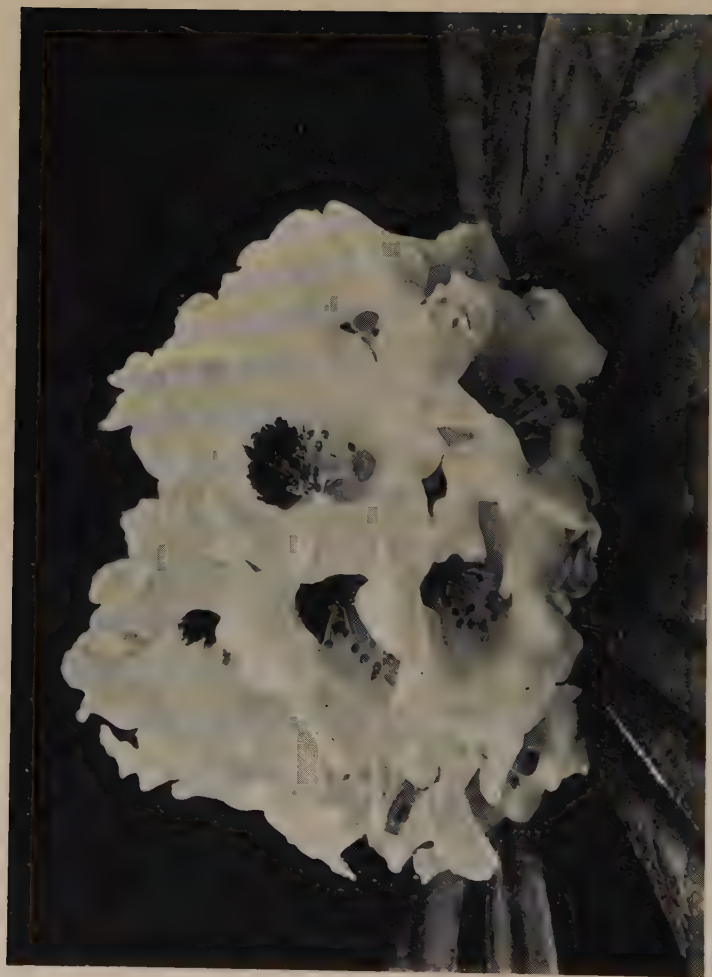
R. Fortunei (Lindley). The type member of its series, and probably the first rhododendron to be introduced from China. It was found by Robert Fortune in 1859. It is a shrub about 10 feet high. The leaves are oblong and tapering, smooth above and slightly glaucous below. The flowers are large, 2 to 3 inches in diameter, and are born in loose clusters in May. The colour is pale pink fading to white; they are fragrant. The young growth and the flowers come at the same time.

With so many finer members of the same series, like *R. decorum* and *R. discolor*, and also of hybrids of which it is a parent, among them *R. Loderi* ($\times$ *Aucklandii*), *R. Fortunei* is becoming a rare plant in cultivation, and, indeed, young plants of true



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R. CALOPHYTUM.

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R. Fortunei are rather hard to find. It has been a worthy parent of many magnificent offspring, and I have a kindly feeling towards it. It is quite hardy.

Another member of the series is *R. rhanthum* (Balfour and Smith). The leaves are petiolate and glabrous above and below, very dark in colour. The flowers are pink or rose-pink and are born in June. An attractive species, but I find it a slower grower than the rest of the series. It seems to become sluggish when it is about a foot high.

R. sutchuenense (Franchet). First discovered by Farges in eastern Szechuan, and introduced by Wilson from Hupeh in 1900. A shrub up to 10 feet high and as much in diameter. Leaves narrow and tapering, smooth and paler below. Flowers numerous in a close truss. Corolla widely campanulate. Colour pale rose with crimson markings, with and without a dark blotch at the base. Flowers in late April.

A most handsome species, very firm and striking in growth and beautiful when in full flower with its heavy trusses. It should be grown along with *R. calophytum* in moderate shade. It is the better for an occasional manuring.

There is a very fine form called var. *Geraldi*, with larger flowers of a darker shade. The form with a blotch has paler flowers and has a glabrous midrib, and is called *R. praeevernum*. As the variations are extremely slight and the forms run into each other, this seems to be an unnecessary complication. I should not mention it except that it is listed in some catalogues, for to all intents and purposes it is the same as *R. sutchuenense*.

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GRANDE SERIES

R. giganteum. I hesitate whether to mention this plant or not. It is quite certain that none of this generation will see it in flower. Forrest found it at a height of 9,000 feet in 1919 on the Shweli-Salween divide. It is a tree of 80 feet and grows in the rain forest. It does not flower until it is nearly full grown, and as it was found when the seed was ripe the flowers have not been seen. The leaves are very large. So far the seedlings appear to be fairly hardy, provided that they are grown in deep shade. The seed has germinated well and the number of seedlings in this country must be large, but whether it is worth growing this rhododendron monstrosity remains to be seen.

There is another member of this series called *R. sino-grande* which is fairly hardy. It has enormous leaves often 2 feet or more in length and a large yellowish-white truss of flowers with a crimson blotch. It requires complete shelter from all wind. I make no mention of the type member of the series, *R. grande*, often called *R. argenteum*, as it is not hardy except in the west.

HELIOLEPIS SERIES

R. pholidotum (Balfour and Smith). Found by Forrest in 1906 in the Tali range. A shrub from 3 to 5 feet high. Leaves ovate. Flowers, usually five in a cluster, rose or rose-lilac in colour, campanulate in shape.

A useful shrub, though not particularly striking. It is absolutely hardy. Although the *Heliolepis* series will stand a certain amount of ill-usage, they

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require attention to show them off to full advantage. They need a fairly damp atmosphere, when they become bushy and attractive in growth, otherwise they soon acquire an appearance of neglect.

R. plebeium (Balfour and Smith). Found by Forrest in 1912 on the Shweli-Salween divide. A shrub from 4 to 8 feet. The leaves are oblong-obovate and are broader than those of *R. pholidotum*. Like those of all this series they are densely covered with scales and are aromatic. The flowers are carried in a loose truss and are usually five in number. They are rose in colour, and flower in May.

Although coming from a monsoon area I find this plant quite hardy. As in other members of the series the flowers are not striking, but they are such sturdy bushy growers that I have a distinct liking for them. The aromatic scent is particularly wholesome.

R. rubiginosum (Franchet). Introduced by Delavay in 1889 and Forrest in 1906. This shrub varies enormously both in height and in the colour of its flowers. According to whether the situation is dry or moist, it will vary from 6 feet to 20 feet or more in height. The leaves are lanceolate, densely scaly below, and very aromatic. The flowers are carried four to eight in a fairly tight truss, and vary from a dull magenta to a clear rose-lilac with crimson markings.

It flowers in May and is very floriferous. It is better not to plant this rhododendron in too much shade, else it is inclined to become straggly in growth. It is a shrub which in my opinion is improved by pruning, for it breaks readily and can be made into a firm and handsome bush.

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Two other members of this series are in commerce: *R. heliolepis* (Franchet), a shrub of 5 to 7 feet, flowers rose with purple spots; and *R. brevistylum* (Franchet), 3 to 5 feet in height, and flowers pale rose to rose-purple. Although hardy they are not very striking.

IRRORATUM SERIES

R. irroratum (Franchet). I include this rhododendron with some hesitation. As a plant *R. irroratum* itself is not of the first quality owing to the great variation of the colour of its flowers, which is white with red spots and is often muddy in tone, but it is the type member of a series which contains some magnificent species, although they are not exactly hardy. There are three species of this series—*R. eriogynum*, *R. prophantum*, both Forrest plants, and Farrer 1444—in commerce under the name of *R. facetum*, but really *R. Kyawi*, which are absolutely in the first rank of rhododendrons. Their flowers are intensely vivid crimson or scarlet, with a purity of tone that cannot be excelled. *R. prophantum* and *R. Kyawi* are both trees which come from the monsoon area of the Nmai'hka-Salween divide, and even in the west of England they are badly cut by the frost; *R. eriogynum* is a shrub from east of Tali lake, where it grows to a height of 10 feet. This is slightly more hardy than the other two and is well worth growing in a cool house.

This note, however, is written more as a warning against buying seedlings of Farrer 1444, which is already in the hands of several nurserymen. It is the most tender of the three and is cut to pieces.

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LACTEUM SERIES

R. fulvum (Balfour and Smith). Found by Forrest on the Shweli-Salween divide in 1912. It is a shrub which grows to a height of 20 feet. The leaves are petiolate and covered on the under surface with a dense reddy-brown indumentum. The flowers are broadly campanulate and are carried four to five in a loose truss. The colour is pale rose with a deeper blotch.

This is a very handsome rhododendron and well worth a place in the garden. As it comes from an area affected by the monsoon, it requires shade and abundant moisture. If it suffers at all from drought, the leaves at once curl up and are quickly shed. I find it a most obstinate plant to nurse back into health.

There is a very close relation called *R. fulvoides*, which comes from the drier area of the Mekong-Salween divide, where it was found by Forrest at an altitude of 11,000 feet. None of the plants in this country are of large size as yet, but probably they will prove more amenable to our climate. It differs principally in the number of flowers on a truss: sometimes as many as twenty are carried; there is also more cream in the colour. It does not appear to be such a tall grower as *R. fulvum*.

There is another close ally in cultivation called *R. Beesianum* (Diels), found by Forrest in the Lichiang range. Its flowers are either white or a deep rose. It is a shrub of 15 to 20 feet and is difficult to grow in this country.

R. Traillianum (Forrest and Smith). A shrub 15 to 20 feet, with elliptic leaves, leathery, dark

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green above and felted below. The flowers are carried nine to twelve in a truss. The corolla is campanulate and the colour pure white with crimson spots. It was found by Forrest in the Lichiang range in 1910.

A very fine rhododendron and the easiest of this difficult series to grow in this country. It is attractive and sturdy in appearance. The treatment is the same as for other members of the series.

LAPPONICUM SERIES

R. chryseum (Balfour and Ward). To which can also be joined *R. flavidum* (Franchet) and *R. primulinum* (Hemsley). For purposes of cultivation these three members of the Lapponicum series are the same. *R. flavidum* and *R. primulinum* are synonyms of the same plant which comes from Szechuan, while *R. chryseum* is a Yunnanese form. *R. chryseum* was found by Kingdon Ward on the Tibeto-Yunnan frontier in 1913. They are many-branched dwarf rhododendrons with yellow flowers so compact as almost to form a rosette. They flower early in April, and so are sometimes cut by the frost.

Dwarf yellow rhododendrons are not common, and the colour of these species is very pure. Like all lapponicums they will grow best where there are extremes of temperature, but they will not stand severe sun scorching. The best position for them is on a moraine or rocky bank where they can get a certain amount of exposure and moisture.

R. fastigiatum (Franchet). To which may be added *R. hippophaeoides* (Balfour and Smith), *R. im-*

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peditum (Balfour and Smith), *R. intricatum* (Franchet), *R. rupicolum* (Smith), and *R. scintillans* (Balfour and Smith). I have grouped these members of the Lapponicum series in the one description, as they only vary in minor points and their treatment is the same. The flowers vary in colour from plum-purple through lavender to a very pure lavender-blue; the strongest purple is that of *R. rupicolum*, the bluest, some forms of *R. hippophaeoides*. The leaves are ovate, except in the case of *R. scintillans*, where they taper at both ends. *R. fastigiatum* and *R. impeditum* are sometimes mistaken for each other, but they are easily recognisable by the grey tinge in the leaves of *R. fastigiatum*, which gives it a hoary appearance, while those of *R. impeditum* are always dark green.

On the whole *R. hippophaeoides* is the largest of the group, but the size of these dwarf rhododendrons varies enormously according to the situation in which they are planted. If grown in a mass in an exposed position, they will keep their dwarf prostrate habits and will rarely exceed 18 inches in height; if, on the other hand, they are grown as specimen plants in situations favourable for growing larger rhododendrons, they will increase mightily in size and end by being a bush of 4 feet in height. This is largely a matter of personal taste, although I prefer them as dwarf as possible, for these plants take the place of heather on the moors and alpine pastures of China. In a garden which I have visited lately *lapponicum* and other alpine species are grown very successfully on small terraces. The walls of the terraces are made of peat cut in the shape of large bricks, while the soil inside is a mixture of peat and loam. They

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are sheltered from the south by a high wall which keeps off an undue amount of sun. In this case the seedlings are planted singly about a foot apart and no doubt will grow fairly tall, but even now those which were planted out a year or two ago are forming thickets.

It is only fair to add that one of my friends has objections to planting these dwarf alpine in the mass, as he says that if planted singly they will form in time small bushes of a grace that can hardly be excelled by any rhododendron. His garden, however, has always the advantage of a damp atmosphere without an undue amount of sun. All plants make great leaf growth and look fat and bushy at all times of the year.

As they are very easy to propagate by cuttings and will flower in eighteen months from seed, it is simple to raise a large stock of them, when they can be planted out either in a mass in the rock garden or on an exposed bank. Provided that they are saved from sun scorching throughout the whole day, I find that moderate drought has little or no effect upon them, but if they are planted in an exposed place, they must always be planted in clumps, and the clumps also should be close together. Naturally, the more exposure you give them the dwarfer they will be. *R. fastigiatum* has the added advantage of often flowering in the autumn as well as during April and May. A January flowering form of *R. scintillans* was shown this year at Vincent Square.

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LEPIDOTUM SERIES

R. glaucum (Hooker). Found by Sir Joseph Hooker in Sikkim in 1850. A low-spreading shrub of 2 to 4 feet. Leaves about an inch long, oval, dark green above and glaucous fawn below, darkening as the leaf grows older. Flowers bell-shaped, rosy-purple, born on a loose truss. When the leaves are crushed they exude a powerful aromatic scent.

This fine rhododendron used to be very popular in gardens, but is not so common as it used to be. It should certainly be grown, although the flowers are sometimes cut by spring frosts. It is particularly useful as a low plant for the woodland, and I have seen fine specimens of it grown among thin birches along an old cart track. On the other hand, it is not to be despised in the garden. It will stand a certain amount of sun, and is often used as a plant in the foreground of formal rhododendron beds.

The type member of the series, *R. lepidotum* (Wallich), is also in cultivation, but is hardly worth including in a collection. It is a sparse flowerer, and the colour, usually rose-purple, is uninteresting. Its only advantage is that it sometimes continues in flower for several months.

MADDENI SERIES

R. ciliatum (Hooker). The hardiest plant of the series. In Cornwall and on the west coast of Scotland it will grow to a bush 9 feet high and 14 feet through. It is hardy in all parts of the country, but is liable to be cut, as it flowers in April. Its leaves

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are tapering and very bristly, while its flowers are widely campanulate, deep rose in the bud, fading to a pale pink as they grow older. It is very floriferous and requires careful nursing to preserve its strength. There are two ways of growing the plant: one, to give it moderate shade and a damp atmosphere, when it will grow as a bush; the other way, which is just as attractive, is to plant it where it will get full sun, all the wind, and all the rain, when it will make a compact mat a foot high. This is done at the Royal Botanic Gardens, Edinburgh, with great success.

As it is one of the early importations into this country from the Himalayas, many of the old specimens in Cornwall were planted before the situation necessary for rhododendrons was understood. There you will find some of the finest plants grown on the edge of a sheltered path, a position which is not suited to them.

Two other fine members of this series under numbers Farrer 918 and 1044 are in commerce. Although lovely, it is not advisable to add these plants to your collection unless you live in the west. They both have large wavy white flowers which are sweetly scented.

NERIIFLORUM SERIES

R. dichroanthum (Diels). Found by Forrest in 1906 on the eastern flank of the Tali range, and one of the very best of small scrub rhododendrons. It has narrow tapering leaves. A full-grown specimen will be about 5 feet in height, but it will start to flower when about 18 inches. The corolla is bell-

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shaped and fleshy in texture, while the colour varies from a pinky-yellow, through yellow, to a deep orange.

Its sturdy appearance is attractive and the colour of the flowers is magnificent. In whatever variety you get the colour is always clear. Every shade is good, and it is merely a question of personal taste as to which is the best, but caution should be used in selecting a place for it among other rhododendrons. Probably the best species to grow with it is the bushy form of *R. campylocarpum*, for their colours blend together. It is sometimes seen planted along with crimson flowers, when the colours are inclined to clash.

Plants of this type are not the easiest to grow, especially when very young. They have a habit of holding back unless planted in a favourable position. Their low habit does not make them so susceptible to wind, but drought they abhor. Many of this class are found in sheltered bays in the hills where there is plenty of moisture and a rich soil. Several plants should be grown in a group about 2 feet apart, as they are distinctly community plants.

R. haematodes (Franchet). This magnificent rhododendron should be in every collection. It was first discovered by Père Delavay in 1885, and was introduced from the Tali range by Forrest in 1906. It is a compact shrub which will grow up to 4 feet. The leaves are oblong-ovate, green above and covered on the under surface by rusty-coloured indumentum. The flowers are carried in a loose truss of four to six on woolly stalks. The corolla is broadly bell-shaped and of vivid rich crimson. It is absolutely hardy, and flowers in May.

There is a great deal which can be said in favour

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of this species and very little against it; probably its only fault is that it is rather slow of flowering. It likes fairly rich and moist conditions with considerable overhead shade, and plenty of freedom in which it can expand. I find it one of those rhododendrons which do particularly well when grown in conjunction with taller shrubs, not rhododendrons. I have several healthy plants in a colony below a large *Viburnum fragrans*, with a broad-leaved berberis, *B. kansuensis*, as a near neighbour. As it is not a fast grower, there is no danger of *R. haematodes* running to wood, and it will delight you in its own good time with its brilliant coloured flowers. I place this species among the first twelve rhododendrons in general cultivation.

R. neriiflorum (Franchet). The type member of its series. Discovered by Delavay at Tali in 1885, it was introduced by Forrest in 1906. A shrub of 4 to 8 feet. The leaves are oblong-lanceolate and glabrous on both sides. The flowers are carried ten to fifteen in a loose truss. The corolla is firm in texture and open bell-shaped. The colour is a brilliant scarlet-crimson.

Slow growing, but quite hardy. It flowers in April and May.

The *neriiflorum* series is divided into several phylums, or sub-divisions: *neriiflorum*, *eudoxum*, *Forrestii*, *haematodes*, and *sanguineum*. The description given above holds good for the majority of the series, except that the *haematodes* phylum has a dense and the *sanguineum* a thin tomentum on the under surface of the leaves. As the majority of these plants have only been lately introduced, many of them are only just coming into cultivation, and it is unnecessary

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to describe them separately. They are all extremely valuable plants, although slow growing. The colours run through every variation and are all brilliant in purity of tone. They require moisture and coolness at their roots, but as none of them are large plants, it is not difficult to find room for them among other rhododendrons or shrubs.

In addition to *R. dichroanthum* and *R. haematodes*, which are described separately, some of the other species of this series in cultivation are *R. eudoxum*, crimson or deep rose; *R. repens*, a creeping rhododendron with blood-red flowers; this is the most difficult of the series to cultivate successfully. Probably the best position is in a crevice between two rocks where it can send its roots into the cool soil. It appears to be the same plant as *R. Forrestii*. *R. aemulorum*, deep crimson; *R. apodectum*, deep rose to crimson; *R. euchroum*, brick-red; *R. floccigerum*, blood-red (some forms are better than others); *R. citriniflorum*, lemon-yellow; *R. haemaleum*, black-crimson; *R. sanguineum*, very dark crimson. They flower in April-May.

NIVEUM SERIES

R. argyrophyllum (Franchet). A common species in western Szechuan, where it averages 15 feet. Leaves oblong-lanceolate, smooth above and covered with a white tomentum below. Flowers in a loose truss of six to ten, broadly campanulate, white in colour, sometimes fringed with pink.

A slow grower, but hardy. Mr. Wilson found it growing in thickets with *R. chartophyllum*. It is of moderate importance and should grow in semi-shade.

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R. floribundum (Franchet). Another Szechuan plant, but from a lower altitude. The description is akin to that of *R. argyrophyllum*. The plant is very floriferous and the colour is usually a true magenta, a colour which is much maligned. A fine bush of *R. floribundum* is by no means to be despised, but it should be planted among white-flowered plants. It requires more shade and shelter than other members of the series, as it is often cut by frost in spring.

R. niveum (Hooker). The type member of the series. A shrub of 12 to 15 feet. The leaves are felted above and below when young, the upper surface turning a glossy green as they grow older. The flowers are a dull purple and are not striking, but the foliage of the plant is most attractive. It comes from the Himalayas and is hardy, but requires a moist atmosphere, otherwise the trusses will be very small.

SALUENENSE SERIES

R. caloistrotum (Balfour and Ward). Found originally by Kingdon Ward in 1914 on the Burmo-Chinese frontier, the seed was introduced by Farrer in 1919, under number Farrer 1045. This alpine series of rhododendrons is easily recognised by the size of the flowers, which are particularly large for the dwarf stature of the plant. It rarely grows more than 18 inches high on the Burmese alps, although many of these alpine species grow to a larger size in our gardens where the conditions are not so severe. The foliage is grey-green, while the flowers are 2 inches in width and in shape rather like a cistus. The colour is rose, in some cases very pale.

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R. caloistrotum should be planted in clumps with each plant almost touching its neighbour. As long as it is in a fairly moist position and does not get the full strength of the sun, it has no violent objection to wind. I have seen acres of it in Upper Burma, where it grows along with *Meconopsis*, *Salix alpina*, many of the Lapponicum series of rhododendrons, *Aster alpina*, and innumerable saxifrages, but curiously enough it never strayed on to the alpine meadow, which was apparently forbidden ground. It kept itself to little flats among boulders and to the more rocky ground.

This rhododendron has been shown at Vincent Square and is a great acquisition, as it is easy to propagate from cuttings. If grown from seed, it is in full flower by the third year. It flowers in May.

Several other members of this series found by Forrest and Ward should shortly be coming into general cultivation. All that I have seen or heard of are charming little plants.

SELENSE SERIES

R. Fargesii (Franchet). Originally found in 1885 by Père Farges on limestone rocks in western Szechuan, it has been introduced both by Wilson and Forrest. Although it has been found in China up to 18 feet high, it shows little sign of growing much more than 10 feet in this country. Its leaves are oblong and rounded at the apex. The flowers are campanulate and 2 to 2½ inches in diameter, born in a loose truss and pale rose in colour. It flowers in April-May.

It is inclined to be too floriferous, and it requires disbudding as well as careful attention. It is per-

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fectly hardy and a very beautiful plant. It has a habit of curling its leaves when the sun strikes them, but this must not be taken as a sign of ill-health. It is so graceful in full flower that plenty of room should be allowed for expansion, so that it may be as effective as possible. It should be grown in half-shade and in fairly rich soil.

R. panteumorphum (Balfour and Smith) is a member of the same series with yellow flowers. It was found by Forrest in 1904 on the Salween-Mekong divide. It becomes a useful shrub about 4 feet high. It should grow in any position suitable for *R. campylocarpum*.

TALIENSE SERIES

R. adenogynum (Diels). Found by Forrest in the Lichiang range in June 1906. Its chief characteristic is the leathery texture of the egg-shaped leaves, which taper to quite a sharp point and are clothed on the under surface with rusty or tawny-coloured hairs. The flowers are large and are carried six to ten in a cluster. Their colour is white, tinged with pink on the outside. It flowers in this country in May. Forrest describes it as a shrub 6 to 8 feet high. It has a spreading habit, and a well-grown plant will be as much or more in diameter as it is in height.

It lives on the high plateaux where scrub and alpine rhododendrons meet, and Forrest found it in company with *R. oreotrephes*, *R. fastigiatum*, and *R. intricatum*. It is quite hardy and is well worth growing for its general appearance, although it is rather slow of flowering. Its light-coloured wood



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and firm leaves give it a sturdy look which is eminently satisfactory.

R. Clementinae (Forrest). Forrest found it in 1913 in north-west Yunnan. It is a shrub of 6 to 9 feet. Leaves oval, coming to a very short point; under surface clothed with cinnamon-coloured felt. Flowers soft-white and spotted, broadly bell-shaped, seven to ten in a tight truss.

I find that this rhododendron must have moisture; the east coast is really too dry for it. It is absolutely hardy. I place this species very high in my list.

Another member of the same series is *R. Faberii* (Hemsley), a Wilson plant from Szechuan, where it grows to a small tree of 20 feet. The leaves are typical of the series and the flowers are white spotted with red. It makes its growth late and flowers in May, and so is a useful though not particularly striking plant for our gardens.

There are two rhododendrons from the Caucasus which are nearly related to the Taliense series: *R. Smirnowi* (Trautvelter) and *R. Ungerni* (Trautvelter). They both have narrow tapering leaves covered below with an indumentum; *R. Smirnowi* has bright magenta and *R. Ungerni* pale rose flowers. The latter is a larger shrub than the former and also flowers later.

They are both rather difficult to raise in their seedling stage, but they are perfectly hardy. They are not plants which you can place in the first rank of rhododendrons, although at the Royal Botanic Gardens at Edinburgh they have a magnificent bush of *R. Smirnowi* 6 feet through and about 4 feet high.

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THOMSONI SERIES

R. aiolosalpinx (Balfour and Farrer). Discovered by Farrer in 1919 on the Nmai'hka-Salween divide in Upper Burma. A shrub up to 8 feet, leaves oval, pale green above and below. Flowers bell-shaped, waxy in texture, six to eight in a loose truss (Farrer 926).

This remarkable rhododendron has not yet had time to flower in this country, but I know of no plant with such variation in colour. I have seen them pure white, creamy-white, white tinged with yellow, blush-pink, rose, and salmon-pink. All the shades are notable for purity of tone and all are equally attractive. So far seedlings have proved themselves hardy, but coming from a monsoon area, they require a moist atmosphere and protection from drought. In Upper Burma it usually grows on the banks of streams where the roots can be well soaked in summer at the time of the rains.

R. cyanocarpum (Franchet). Another fine member of the series. Discovered by Delavay in Yunnan in 1895, it was introduced by Forrest a few years later. The leaves are oval, smooth above and below. The flowers are bell-shaped and are bluish-white in colour, while I have seen in May one plant with pale pink flowers.

I am not sure if the white-flowered form has flowered yet in this country. Its temperament is worthy of all praise. I place it among the most accommodating of all Chinese rhododendrons. It is absolutely hardy, makes its growth at a reasonable time, and is not exacting as to situation so long as it does not get the full force of the sun. If its flowers

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prove as good in cultivation as its general appearance, it should become a very popular plant.

R. orbiculare (Decaisne). Discovered by Père David near Moupin in 1877 and introduced from the same area by Wilson in 1904. A shrub about 10 feet high, and as much or more in circumference. The leaves are rounded and are carried on long petioles; they are pale on the under surface. The flowers are campanulate in shape and are born sometimes as many as ten in loose clusters. In colour they are a pure rose.

This is one of the most difficult of rhododendrons to grow, and I should hesitate to include it, were it not that I have seen it in several nurserymen's catalogues. It flowers in May and is hardy, but it is stubborn as a mule, if it does not want to grow. I should suggest planting it in rich soil in half-shade and to keep it continually mulched with leaves. The moment they disappear another layer should be placed on the soil around its roots. It is a magnificent rhododendron and is worth any amount of trouble.

R. Thomsoni (Hooker). Introduced by Hooker from the Himalayas in 1849. A shrub from 10 to 15 feet. Leaves oval, dark green above and glaucous below. Flowers six to eight in a loose truss. Corolla bell-shaped, waxy in texture, and brilliant blood-red in colour. It flowers in April-May.

I should certainly place this amongst the five best species in cultivation. Its appearance is rich and healthy; there is nothing frail about it. On the east coast of Scotland I grow it successfully in full sun, but in the home counties it will require a little shade.

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Owing to the cold spring last year it did not make its growth with me until August, but this is unusual. It is absolutely hardy and a very easy plant to grow. Care should be taken about planting it with other crimsons or scarlets; in fact, with rhododendrons of this colour I always think it is better to separate them. There is no colour so open to comparison, and many fine plants are despised because they are not quite so vivid as their next-door neighbour. There is a form called var. *grandiflorum* with flowers larger than the type, but I find it a slow grower, and not so hardy.

Some of the plants in commerce are not quite true in breeding, but for the amateur this should be ignored. The more the specialist argues upon a point like this the more complicated rhododendrons become. The colour is the same in any case.

TRICHOCLADUM SERIES

R. trichocladum (Franchet). A semi-deciduous small shrub. Leaves obovate, dark green above and paler below. Flowers flat, carried three to four in a cluster, sulphur-yellow in colour.

It is absolutely hardy, and although not in the front rank is a useful rhododendron. It does not mind sun, but should be planted in a fairly moist situation.

Another member of the series is *R. melinanthum* (Balfour and Ward), which I am told is the best of the series and a better yellow than *R. trichocladum*, which it closely resembles.

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TRIFLORUM SERIES

R. ambiguum (Hemsley). Found by Wilson in 1908, it is a very common plant in western Szechuan, where he describes it as not being particular about where it grows. In this respect it is very useful in our gardens and will stand rougher treatment than most of its kind. Sun and moderate drought it has little objection to. Like all the Triflorum series, it is a slender twiggy shrub which grows up to 6 feet, with narrow leaves, covered below with scales and distinctly aromatic. Its flowers are about $1\frac{1}{4}$ inches in diameter with a very short tube. It is very floriferous in late April and early May, and its flowers are of a pale yellow colour with a faint greenish tinge.

Although its colour is not striking, yet its accommodating habits and vigorous growth make it a valuable plant. It is shown off to best advantage if planted in a clump of ten or twelve together, but such a clump should be kept well away from flowers of an orange or yellow colour, which kill the rather pleasant greenish tinge of *R. ambiguum*.

R. Augustinii (Hemsley). A twiggy shrub which grows to a height of 7 feet. The flowers, as in all this series, are almost flat in appearance owing to the diameter of the corolla and the shortness of the tube. The colour varies from white tinged with the faintest lilac or blue to a nearly pure blue. The bluest form, collected by Wilson under number 4238, is slowly coming into cultivation. The lilac-purple form is also well worth growing, but care should be taken that the pink-lilac form does not get into your garden, for the colour is muddy and the appearance of muddi-

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ness is increased by yellow spots on the upper surface. As it strikes easily from cuttings, it is always as well to see the parent plant before making a choice.

R. Augustinii is a very common species in Hupeh and Szechuan, where it grows exposed to full sun. In Scotland and the north of England this is practicable, but in the southern counties, where the sun heat is stronger, it will do better in partial shade. Like all this series it is seen to best advantage when grown in a clump. It flowers in late April or May and is very floriferous, so much so that it is as well to disbud occasionally, otherwise its strength is sapped to such an extent that the growth is retarded.

R. chartophyllum praecox (Diels). True *chartophyllum* is so closely allied to *R. yunnanense* that for all practical purposes they are the same, but the variety called *chartophyllum praecox* is a very fine and useful plant. It was found by Forrest in north-west Yunnan in 1906. It is interesting to note that he describes it as the only rhododendron cultivated there by the Chinese in their gardens. It is an upright, free-growing shrub from 5 to 7 feet. It is semi-deciduous; the leaves are narrow and pointed, about 3 inches long; they also colour slightly in the autumn. The plant is very floriferous with the typical funnel-shaped flowers of the series. They are white or the very palest pink, usually with crimson markings, although there is also a form where the markings are orange. It flowers in late May and is perfectly hardy.

Although valuable for group planting, its appearance is so diaphanous in full bloom and its habit is so graceful that specimen plants should also be grown.

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It is very effective planted facing west with a dark background where the evening sun will illuminate the whole plant. It is very easy to strike from cuttings and the plants require little attention.

R. lutescens (Franchet). Found originally by Abbé David in Szechuan, it was introduced by Wilson from the same neighbourhood in 1904. A loose-growing shrub up to 7 feet high. Leaves lanceolate, fairly pale in colour. Flowers singly or in pairs, broadly campanulate, pale yellow in colour.

Several people have remarked that this species is not absolutely hardy, but the longer it remains in the country the more it seems to be able to acclimatise itself. This is one of the triflorums which needs to be seen in a mass, either of its own kind or along with other triflorums. As a single plant its rather delicate beauty can hardly be realised, but in a mass it is lovely in full flower, particularly if it is planted against a darker background. It requires semi-shade, and should be planted close so that a thicket can be formed. As it strikes easily from cuttings a stock can soon be raised, but if you lack a sufficient number of plants it may be planted along with *R. ambiguum*. Like all this series, it may be heavily pruned, if it is inclined to become too straggly.

R. oreotrephes (W. W. Smith). Found by Forrest in 1906 on the Lichiang range. A shrub about 20 feet. The leaves are usually ovate and thick, glabrous above and scaly below. Some are of a normal green colour, others have a blue tinge in them. The flowers are carried four or five in a cluster, broadly funnel-shaped, deep rose with a trace of lavender in it; some forms are spotted.

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Although the new growth comes fairly early, it is rarely cut by the frost, while the flowers appear in May or early June. This is a very useful shrub and is not a typical triflorum. The leaves are not so narrow or so acute, and the growth is more bushy. It is very floriferous and is graceful in habit. I find that it is not particularly touchy about moisture, and it grows quite well with me on a fairly dry bank. The colour is rather difficult to match, and if possible it should be planted with whites or with some other shrub such as berberis. It is as well to point out here that particular care should be taken about planting those indefinable colours which centre on pink and lilac, as they are the most likely to clash. *R. plebeium*, *R. rubiginosum*, *R. zaleucum*, *R. Souliei*, etc., should all be seen in flower before any decision is taken about their final positions.

R. villosum (Hemsley and Wilson). A shrub of 10 to 15 feet found by Wilson in Szechuan in 1904. It is a typical triflorum in appearance. The colour of the flowers varies from light to dark purple.

Some forms are very fine and of a rich dark purple, a colour which is not common in rhododendrons. This, however, makes it a difficult rhododendron to place, and you should confine yourself to grouping it with whites or yellows. Another vinous-purple triflorum is *R. yanthinum* (Bureau and Franchet), which in turn has a synonym, *R. concinnum*. The colour is not so good as in the best forms of *R. villosum*. Another deep mauve of the same series is *R. Benthamianum*; it is rare in cultivation.

R. yunnanense (Franchet). A common species in China, it was first discovered and introduced by Dela-

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vay in 1884 and has since been found by Wilson and Forrest. The colour of the flowers is pale pink with darker blotches or spots.

This is the best of the series, and probably the best of all species for the ordinary garden. It flowers in late April or early May with extraordinary vigour. It will grow in any garden and practically under any conditions. It is an excellent plant for growing as a hedge. There is another species in cultivation called *R. Davidsonianum*, which is like a poor imitation of *R. yunnanense*.

R. zaleucum (Balfour). A large shrub or small tree with pale violet flowers; sometimes they approach blue in colour.

This is not a particularly striking species, but is easy to grow and very easy to propagate. It flowers in May.

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CHAPTER V

AZALEAS

I NOW come to the question of azaleas, upon the selection of which I find it extremely difficult to give advice. There are quite a number of azalea species, about equally divided between the old world and the new, and advice is easy. Many of them are quite distinct and are attractive plants to grow, having a delicate grace and a quality of flower and colour all their own. No doubt many of them will become increasingly popular in our gardens. My advice with regard to azalea species is to grow all you can get by hook or crook, as long as they are hardy. There are a fair number of American species, like *R. canescens*, *R. alabamense*, and *R. prunifolium*, which are just on the border line between hardiness and non-hardiness, and so are hardly worth growing.

Rather the difficulty lies in the quantity of garden varieties, most of which are so good that it is impossible to differentiate between them. Azaleas have long been popular with hybridists, and the stocks have become so shuffled, and the names have been scattered with such reckless profusion, that it is next to impossible to give a satisfactory short list of desirable garden varieties.

A particular case of this prolixity of names has just come to my notice, although it happens to be of "Indian Azaleas," which are not hardy. I purchased

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a short time ago a book published in 1881, called "The Iconography of Indian Azaleas," translated from the Dutch of Auguste van Geert, one of the most famous of the raisers of azalea hybrids. In this there are thirty-six coloured plates and descriptions of named varieties well known at that date. I have been unable to trace a single name in a modern list, and yet I recognise at least a few of these varieties as being in cultivation to-day. There is no doubt that the original names have been smothered in the course of forty-five years.

Apparently this prodigality in names is not confined to Europe, for Mr. E. H. Wilson, in his valuable monograph on azaleas, talking of the Kurume azaleas in Japan, says: "Unfortunately, every grower and enthusiast names the plants according to his fancy, and the result in a few years will be chaos. And this is helped by the fact that every slight sport or variant is kept and named, and no attempt at selection is made."

Such being the case, I have balked at listing garden varieties, and have contented myself with giving general descriptions of the different classes of garden hybrids.

Many azaleas are hardy and will stand full sunshine, thus making them useful as bedding plants. Nevertheless, what I said about feeding all rhododendrons applies equally to azaleas. The more food you give them in the form of generous supplies of leaf mould, the more will they respond. It is important to remove all seed pods if good flowers are required the next year.

The other day I admired a fine collection of a

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variety of *R. (azalea) indicum* growing in a nursery. They were grown in pots, and showed magnificent masses of flower, so thick that they formed solid umbrellas of colour. I asked the secret of the nurseryman's success, and was told that it consisted of careful repotting every year, and watering with a solution of cow manure during the period of the formation of the buds. The result was certainly astounding, for many of the plants were fifteen years old. There is little doubt that if an azalea is expected to flower profusely every year it must be carefully cultivated.

A word of warning must also be given about making beds for azaleas. Many gardeners are accustomed to make them with a hump in the middle, so as to bring into view the plants in the middle of the bed. This is a mistake, for in a dry year the plants in the middle will get little or no moisture, being on a higher level, with consequent running off of water. All beds should be made level, and if possible an inch or two lower than the surrounding ground, so that water may run into the depression and not away from it.

Azaleas are particularly easy plants to raise, either from seed or by layers and cuttings. In raising plants from seed, it is extraordinary how true most of the varieties come, considering the mixed parentage of many of the plants. The treatment is the same as that for rhododendron seed. In layering, the commercial way is probably the best, although it completely removes the plant from view. The parent plant is planted rather deeply in the ground, and then every branch is pegged down flat. In two years the young plants may be detached from the parent and planted out. The next year the parent will send up

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strong suckers, which the year after are again pegged down, and so on in rotation. Naturally this method may be modified according to your requirements. I do not advise grafting in the case of azaleas, for layering is a much easier operation, and grafted plants are inclined to be leggy; also the successful grafting of azaleas is a process which requires considerable practice and skill.

As regards situation, I must leave that to the personal taste of the reader. Variety of colour is so enormous that little advice can be given, because the tiny variations are so slight, and yet they may make all the difference to one's likes and dislikes. Azaleas are different to rhododendrons, particularly species, in their colour, for on the whole the colour of the former is more delicate than that of the latter. It more nearly approaches pastel shades. Azaleas are ideal for planting in thin woodland where they can have rather a heavy background to show up their delicate tints. There they will grow to a great size in the course of years if they are properly nourished. In full sun they are inclined to be more stunted in growth, which is, perhaps, an advantage if planted in beds, for they are less inclined to straggle. It is really worth while trying to make a collection of azaleas as complete as possible, for they are wonderful plants; but my advice is to purchase only after seeing them in a nursery or at a flower show, for by actually seeing a plant you can pick colours which suit your own personal taste. It is next to impossible to describe an azalea colour properly on paper, and, although every conceivable variety will suit somebody, yet, like everything else, some are better than others.

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CANADENSE SERIES

R. canadense (Torrey). Syn., *Rhodora canadensis*, *Rhododendron Rhodora*. A native of Eastern North America, including Canada, it was first introduced into England by Sir Joseph Banks in 1767.

A small deciduous shrub up to 3 feet high with slender branches. The leaves are elliptic, dull bluish-green above, and covered below with a thin tomentum. The flowers are rosy-purple and are born 3 to 7 on the end of the branches. They differ from those of all other rhododendrons, by reason of the deeply divided corolla.

It flowers in March or April, and is absolutely hardy. In America it grows in swamps, but in this country almost any soil will suit it, although it must be well fed to bring it to perfection. It is one of those plants which is shown off to best advantage if grown in a clump.

R. Vaseyi (Gray). Discovered in 1878 in North Carolina. A bushy deciduous shrub. It grows up to 12 feet. Leaves oblong-lanceolate, shiny above, sometimes hairy beneath. Flowers carried 5 to 8 in terminal umbels, light rose-coloured.

It flowers in April or May and is quite hardy. There is little doubt that this will become one of the most popular flowering shrubs in our gardens. Although still uncommon, everyone who grows it speaks of it with the highest praise. It has a delicate grace and poise which is entirely its own. It will not grow in full sun, and requires a moist situation in half-shade with a dark background to show off its shimmering mass of pale rose.

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LUTEUM SERIES

R. arborescens (Torrey). A fine plant belonging to the Appalachian mountains of Eastern North America. An upright deciduous shrub growing 9 feet or more. Leaves usually obovate, bright green above, and fairly glaucous below. The flowers are carried in clusters of 3 to 6 and are funnel-shaped, white to pink in colour.

This charming azalea is deliciously scented and flowers in June. It is not nearly so common in our gardens as it should be, for it is graceful and yet sturdy in its growth, while it is very floriferous, and will scent the air for quite a distance around the plant. It is perfectly hardy, but grows best in thin woodland. It should be planted with plenty of room for expansion, for it grows fast and should not be crowded. It is a parent of some of the famous "Ghent azaleas."

R. calendulaceum (Torrey). Eastern United States. The date of its first discovery is uncertain, but it appears to have been in the first half of the eighteenth century. It is a bushy deciduous shrub, not quite reaching the size of its relation *R. arborescens*. The leaves are obovate, the upper surface is slightly hairy, the under surface more so. The flowers are carried 5 to 7 in umbels. The corolla is funnel-shaped, while the colour varies from yellow through orange to scarlet. It is slightly scented.

It is perfectly hardy and flowers in May or June. I can do no better than to quote Dr. Rehder on its merits: "With its brilliant flowers ranging from yellow to scarlet, it enlivens the mountain woods in early summer; and as well in its natural habitat as in

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the garden, it must be considered one of the most gorgeous of American shrubs." It is a parent of some of the best of the Ghent azaleas.

R. luteum (Sweet). *Syn.*, *R. flavum*, *Azalea pontica*. Originally discovered by Tournefort east of the Black Sea, it was introduced into this country by Pallas, the famous Russian botanist. A broad, stout, deciduous shrub growing to 12 feet in height. The leaves are oblong-ob lanceolate. They are slightly hairy when young, but this disappears as they grow older. The flowers are flat, about 2 inches in diameter, and are born in clusters of from 10 to 12 at the end of the naked shoots. It is very sweetly scented and the colour is a soft yellow.

As well as being a parent of some of the finest azaleas, this plant is worthy of being grown in bulk in every garden. It is absolutely hardy, either in full sun or in half-shade. Mr. Millais quotes several plants of extraordinary size, including one at Leonardslee 26 yards in circumference. He then goes on to say: "There is, in fact, no excuse for not planting this noble shrub, as its beauty and ease of culture make it one of the most desirable plants we have."

R. occidentale (Gray). Discovered in California about 1827 and first sent to this country by William Lobb, when collecting for Messrs. Veitch. It is a very near relative of *R. calendulaceum*, and the descriptions of the two plants practically coincide. The flowers are white with a yellow blotch.

It is distinctly a plant for thin woodland, where it is valuable as it flowers in June and July, but it will not stand full sun. It requires heavy feeding, if it is to flower in profusion.



AZALEAS IN WOODLAND.

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R. AUGUSTINII.

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Numerous charming hybrids between this azalea and *Azalea mollis* and others have been raised, some of the best by Mr. Anthony Waterer and Mr. Koester. Most of them are hardy, while they are also excellent plants for forcing.

R. viscosum (Torrey). The Swamp Honeysuckle. A native of Eastern North America and introduced into England as early as the first half of the eighteenth century. It is a near ally of *R. arborescens*, but the leaves are not glabrous. The flowers are carried in clusters of 5 to 9, and are white or pink in colour.

A very sweet-smelling shrub and perfectly hardy. It flowers in June or July. It is one of the species used in the formation of Ghent Azaleas.

OBTUSUM SERIES

R. mucronatum (Don). *Syn.*, *R. ledifolium*. An evergreen shrub of 5 to 8 feet and more in diameter. Leaves oblong-lanceolate, green above, pale green beneath; both surfaces are covered with fine hair. The corolla is widely funnel-shaped. The flowers are carried in small clusters at the end of the branches; they are pure white and fragrant.

One of the most charming of all azaleas. The flowers resemble in shape and size the single greenhouse "Indian Azaleas." It is perfectly hardy, and is particularly useful for massed effects. It is not a very fast grower, but is eminently satisfactory in every way.

R. obtusum (Planchon). A native of Japan. This plant and its many varieties are all densely branched twiggy evergreen shrubs, rarely growing more than

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3 feet in height. They are all exceedingly floriferous. Many varieties are hose-in-hose.

The commonest varieties are:

R. obtusum = Kirishima azalea. Quite hardy. There are some fine pink and white forms, introduced many years ago, which unfortunately are becoming scarce, while the newer introductions vary in colour.

Var. *amænum* = *R. amænum*. Some of the colours in the more lately introduced forms are by no means pleasant, one, a vinous-magenta, being truly horrible.

Var. *japonicum* = Kurume azaleas. Numerous forms, many of which are becoming so popular in this country. Some are hardy and some doubtful, so advice should be asked from the nurseryman who supplies you. The two most popular forms are *Hino-mayo* and *Hinodegiri*, both with carmine-pink flowers. These are now shown regularly at the Royal Horticultural Society's shows, and always cause a sensation owing to their masses of flower. Although hardy in the south and west, they should be taken indoors in the winter in cold parts of the country. Kurume azaleas should be consistently fed to ensure good flowers.

Var. *Kaempferi* = *R. Kaempferi*. The flowers are usually larger than in other varieties of *R. obtusum*. The colour varies, but is usually a flaming brick-red. This very handsome azalea is hardy, but it is shown to best advantage if grown in thin shade.

SCHLIPPENBACHII SERIES

R. reticulatum (Don). Syn., *R. rhombicum*. First introduced into England in 1832. A densely branched, deciduous bush up to 15 feet. The leaves

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are formed in threes or pairs at the end of the branches, and appear after the flowers fall. The flowers are usually in pairs, and are purple.

This plant is quite hardy, and may be planted either in half-shade or in the open. In shade it is inclined to become straggly. It is very floriferous, and the colour is usually fair. It flowers in late April or early May.

R. Schlippenbachii (Maximowitz). Discovered by Baron Schlippenbach in Korea in 1854, and introduced into this country by James Veitch in 1893. A deciduous densely branched shrub about 6 feet high. The leaves are obovate, large for an azalea, and are produced in terminal whorls. The flowers, 3 to 6, are born on terminal clusters. The colour is pale rose spotted with red-brown.

A very fine shrub, but not overhardy. As it flowers in this country in April, it should be planted in a sheltered position in half-shade to prevent the flowers being cut. Mr. Wilson, in speaking of the Diamond Mountains in Korea, says, "In June, these regions are a wonderful sight, with literally miles and miles of the purest pink from the millions of flowers of this azalea."

R. Weyrichii (Maximowitz). Its home is on some of the islands off the coast of Japan. A vigorous-growing deciduous shrub up to 12 feet in height. The leaves are petiolate and bright green, which changes to a dull purple in the autumn. The flowers are carried 2 to 4 in terminal clusters, and are brick-red in colour.

This species has not been introduced into this country for long, but it is proving itself hardy, and

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should be a valuable addition to our gardens owing to the uncommon colour of the flowers. As it comes from a country with a moist sea atmosphere, it should be grown in half-shade, and in as moist a situation as is consistent with good drainage.

Ghent Azaleas.—The parentage of these old favourites of our gardens has been hopelessly lost. The original start was undoubtedly made by crossing the Caucasian *R. luteum* with such American azaleas as *RR. arborescens*, *occidentale*, *nudiflorum*, *calendula-ceum*, and *viscosum*. Since then there have been further crossings between hybrids, and also with *R. molle* and *R. indicum*. In fact, it matters little what you call them. Nowadays, the crossing has always been done with a view to increase of size in the flower and good colour. This is usually an improvement, but one occasionally misses some of the older crosses with smaller flowers, rather like a honeysuckle, and very charming and delicate in their way. I am not going to attempt to give a list of varieties, owing to the enormous numbers in commerce and the assorted nomenclature in existence. My advice is to make sure of getting a young plant or a layer from any variety which takes your fancy.

Indian Azaleas.—Under this name I class all those large-flowered azaleas which are used for forcing and indoor decoration. They are not hardy. There are both single and hose-in-hose forms. Many years ago these azaleas were extremely popular, and there were dozens of named varieties, but lately, with the advent of so many hardy hybrids, they have lost popularity in private gardens, and have turned into florist's flowers to be sold in shops without a name:

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such is the fate of over-popularity. New varieties are now raised almost exclusively in Belgium and Germany.

Japanese Azaleas.—This is another enormous group, most of which originate either from *R. obtusum*, *R. obtusum* var. *amænum*, *R. obtusum* var. *japonicum*, or *R. obtusum* var. *Kaempferi*. See *R. obtusum*.

Mollis Azaleas.—Probably the most popular of all azaleas owing to their hardiness and superb colourings. They will grow equally well in half-shade or in full sun. They are forms and hybrids of *R. molle* crossed with *R. japonicum*, *R. sinensis*, and others.

There are no finer colours in the garden than the oranges and salmon-pinks and yellows of the mollis azaleas. Almost all the colours in this group seem to have an affinity for each other, and they can safely be planted in mass.

NOTE.—Since the above chapter was written my attention has been drawn to an interesting point in growing Kurume azaleas from seed. Owing to the very mixed parentage many shades will come up in one batch of seedlings. It appears that magentas and mauves are the first to flower, so the whole batch should not be destroyed if the first colours are objectionable.

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CHAPTER VI

RHODODENDRON HYBRIDS

THIS chapter also presents a difficulty, for hybrids have long been popular, and owing to their numbers it is difficult to give a satisfactory selection. There have been many keen and successful hybridists, among them Messrs. Standish and Noble, Mr. Paul, Messrs. Cunningham and Fraser, Mr. Mangles, Messrs. Gill, Sir Edmund Loder, Mr. Smith of Penjerrick, Mr. Anthony Waterer, Mr. Gomer Waterer, Mr. C. B. Van Ness, Messrs. T. Methven and Sons, and Mr. J. C. Williams. They have all left their mark on the rhododendron world by producing hybrids which are equal to, and sometimes an advance on, many of the species which have been imported into this country.

On the other hand, I must give a word of advice to would-be hybridisers. It is a hobby which is difficult to keep in check, and some people are too much inclined to cross anything and everything that may be in flower. This is a mistake. By all means cross rhododendrons, but let your hybridising be done with a definite purpose in view. Indiscriminate hybridising only leads to a further influx into our gardens of plants which ninety-nine times out of a hundred will be no better than what we have already. There is little use in crossing two garden hybrids, for they are already as the sands on the seashore in

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number. There is still a great deal to be done in the direction of producing blue rhododendrons and good yellows, particularly large growing plants. This will be accomplished by first crosses—that is, by crossing species, or by second crosses, which are second generation plants. One of the faults of crossing garden hybrids is the shape and quality of the plant and flower produced. They are all too much inclined to resemble their next-door neighbour in form of truss and in the growth of the plant, which is not always desirable, as many garden hybrids are formless and have little or no personality. Although at first sight it is not always apparent, variety in shape and form is one of the greatest charms of the rhododendrons, and this variety should be preserved at all costs. Always remember to cross good forms having the largest flowers. The experience of the best hybridisers shows that the finest forms give the best hybrids.

Propagation of hybrids is accomplished either by layers, graft, or cuttings. Practically no hybrid will come true from seed, among the few exceptions being Cunningham's Sulphur. Layers and cuttings are propagated in the same way as in the case of species, but grafting, either side or saddle, should be done as low as possible on the stock, and the plants set deep in the ground. In this way, the scion will often form roots above the graft, when the stock can be removed; the plant can then grow on its own roots, which is always more satisfactory.

Hybrids, as a rule, are more easily satisfied regarding situation than species, but a large number of the first crosses require the same attention as is given to species. In the following list I have labelled each

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hybrid A, B, or C, according to its hardiness. A includes those which are absolutely hardy, and may be planted in full sun; provided that they are fed and watered, they should flourish in almost any position. B are plants which require rather more attention. They may grow in full sun if there is no other position in the garden in which they can be grown, but this is not advisable. They should be planted in thin shade, and given adequate nourishment and water. C are those which are only really satisfactory in the south and west. They may grow in some sheltered gardens in the north and east, but they will never feel at home. They should be given the same treatment as large-leaved species like *R. Falconeri*.

I have tried in this list to collect together the best all-round hybrids which are in commerce, but it is a difficult task to judge between the merits of some plants. Readers may find some essential omissions, and for these I crave their indulgence. I should, however, like to draw particular attention to the new Dutch hybrids which have lately appeared on the market. They are larger and finer in every way than the ordinary run of hardy garden hybrid. The colour in almost every case is so magnificent that no longer can the owner of an exposed garden complain that the finest hybrids must be confined to Cornwall. In the following list a few are mentioned, such as Earl of Athlone, King George, Unknown Warrior, and Van Ness No. 300.



THE BRIDE.

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PINK PEARL.

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LIST OF HYBRIDS

<i>Name.</i>	<i>Class.</i>	<i>Average Month of Flower- ing.</i>	<i>Colour.</i>	<i>Notes.</i>
Alice	A	May	Rose-pink	A close relation of Pink Pearl. It is a good plant for growing in full sun, and carries a large truss.
Ascot Brilliant	A	April	Red-crimson	Has Thomsoni blood in it. A fine hardy hybrid.
Bagshot Ruby Barclayi	A C	May April- May	Ruby-red Rich dark red	Glory of Penjerrick $\times$ Thomsoni. A magnificent plant both in colour, size of truss, and foliage, but too soft for the east and north.
B. de Bruin	A	May- June	Bright red	
Bodartianum	B	April	White	An old arboreum cross and a very fine hardy hybrid.
Broughtoni	B	April- May	Deep rose with reddish - brown spots	An old arboreum hybrid.
Broughtoni aureum	B	May	Primrose-yellow	An old cross between a rhododendron and an azalea. A very useful plant as it makes its growth late.
Christmas Cheer	A	Feb.- March	Soft pink turning to white	A caucasicum cross. A fine plant for forcing.
Cornubia (Lili- anii)	C	Feb.- April	Pure scarlet	Large flowers and a fine hybrid, but not overhardy.
Corona	A	May	All shades of pink	
Cunningham's sulphur	A	May	Yellow	A very hardy and floriferous caucasicum hybrid. A few years ago it became rare, but is slowly coming into cultivation again.
Cynthia	A	Early May	Deep rose	

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<i>Name.</i>	<i>Class.</i>	<i>Average Month of Flowering.</i>	<i>Colour.</i>	<i>Notes.</i>
Dr. Stocker	B	Early May	Yellowish-white	A very fine cross between Aucklandii and caucasicum.
Doncaster	B	May-June	Bright red	
Duchess of Portland	A	April	White	Fine large flowers: quite hardy; is a very floriferous plant.
Duchess of York	B	May	Soft pink	A very fine hybrid with large sweetly scented flowers.
Duke of Cornwall	B	April	Brilliant scarlet	A magnificent cross between arboreum and barbatum; only moderately hardy.
Earl of Athlone	A	May	Blood-red	Large truss. One of the best hardy reds.
Essex scarlet	A	June-July	Brilliant red	One of the best late reds.
Fastuosum florepleno	A	Late May	Rose-lavender	Large trusses of double flowers.
G. R. Sims	A	June	Brilliant red	This and Essex scarlet are the best late reds.
George Hardy	A	May	White	Very good in full sun; dark foliage.
Gill's Goliath	C	April-May	Rose-pink	Very fine, but soft.
Gill's Triumph	C	April-May	Carmine-scarlet	Very fine, but soft; both this and the previous plant have arboreum blood in them.
Gomer Waterer	A	Late May	White with mauve tinge	A fine hardy hybrid.
Handsworth early white	A	April	White	A very useful plant.
Helen Schiffner	A	May	White	A magnificent plant of pure scarlet; foliage dark.
Ivory's scarlet	B	May	Scarlet	
J. G. Millais	A	Late April	Scarlet	A very fine rich colour.
King George	B	Early May	Scarlet	A very fine hybrid with a large truss.
Lady Clementina Mitford	A	May	Pale orange pink with darker edge	

FOR AMATEURS

<i>Name.</i>	<i>Class.</i>	<i>Average Month of Flower- ing.</i>	<i>Colour.</i>	<i>Notes.</i>
Lady Eleanor Cathcart	A	May	Rose with chocolate blotch	
Loderi	C	May	White or palest pink	The finest hybrid, and one of the best of all rhododendrons. Enormous flowers which are scented. It is never really happy in the east and north. Fortunei $\times$ Aucklandii.
Loder's white	B	May	Pure white	A very fine hybrid with large flowers. Absolutely hardy. I place this as the best hybrid for ordinary gardens. Aucklandii blood.
Luscombei	B	May	Rose-pink	Large flowers.
Luscombe's Scarlet	B	May	Scarlet	A fine hybrid.
Manglesi	B	May	White sometimes with a few red spots	A fine sturdy plant with large flowers. Aucklandii blood.
Mrs. Charles Butler	B	May	White	Probably only a fine form of R. Fortunei.
Mrs. E. C. Stirling	A	May	White	Very floriferous and a fine plant; will grow excellently in full sun.
Mrs. George Paul	A	May	Palest pink turning white	A fine large truss.
Mrs. John Mil-lais	A	May	White with yellow eye	
Mrs. Lionel de Rothschild	A	May	Rose-pink	
Mrs. P. D Williams	A	Late May	Creamy - white with brown spot	
Nobleanum	B	Jan.-March	Red	A very useful plant. If the first flowers are cut, others will follow. The flowers are a good colour, and it is a tall growing plant.
Ochroleucum	A	May	Creamy-white	Very floriferous and a fine hybrid.

RHODODENDRONS

<i>Name.</i>	<i>Class.</i>	<i>Average Month of Flowering.</i>	<i>Colour.</i>	<i>Notes.</i>
Pink Jacksoni (Venustum)	A	April-May	Pink with a few darker spots	A very hardy and valuable plant. Flowers will stand a certain amount of frost, even in the open. A dwarf-growing plant. Caucasicum x arboreum.
Pink Pearl	A	May	Pink	One of the most popular of all hybrids. Will grow in full sun and is very floriferous. There is one criticism to make: the colour is inclined to fade. Aucklandii blood.
Praecox	A	March-April	Rose-purple	A very useful plant; although the flowers are cut by a severe frost yet it is absolutely hardy. It is a cross between ciliatum and dauricum, and is semi-deciduous.
Purple Splendour	A	May	Vinous Purple	One of the best purples; an uncommon colour.
Queen Wilhelmina	C	April	Red	A magnificent truss of large flowers, but tender. Aucklandii blood.
Rosa Mundi	A	April	Palest pink	Another good purple-coloured hybrid.
Royal Purple	A	May	Purple	
Snowflake	A	Late May	Pure white	Very hardy and free flowering.
The Bride	A	April	White, greenish markings on upper lobe	
Unknown Warrior	A	May	Deep rose	A very fine hybrid with large upstanding truss. Aucklandii blood.
Van Ness No. 300	A	May	Pale lavender without markings	Fine large trusses of a colour which is uncommon in hybrids.
White Pearl	A	May	Good white	

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SUGGESTED RHODODENDRON SPECIES

What I consider the twelve best rhododendron species for gardens. This only includes beauty of growth and flower and does not consider questions of hardiness or stubbornness. Probably no one else will agree upon these same twelve as being the best, but this is my own personal opinion and I give it for what it is worth.

<i>arboreum</i> , white, pink, and especially blood-red.	<i>discolor</i> , white.
<i>auriculatum</i> , white.	<i>Falconeri</i> , cream with crimson blotch.
<i>campylocarpum</i> , yellow.	<i>Fargesii</i> , rose.
<i>chartophyllum praecox</i> , white with orange or pink blotch.	<i>baematodes</i> , crimson.
<i>dicbroanibum</i> , orange.	<i>Thomsoni</i> , deep scarlet.
	<i>Williamsianum</i> , pink.
	<i>yunnanense</i> , pale pink.

Twelve large shrub or tree rhododendrons:

<i>argyrophyllum</i> , white.	<i>glischbrum</i> , pink.
<i>auriculatum</i> , white.	<i>Hodgsoni</i> , rose-lilac.
<i>calophyllum</i> , white with red blotch.	<i>puralbum</i> , white.
<i>campanulatum</i> , pale mauve.	<i>sutchuenense</i> , white with crimson markings, or pale pink.
<i>decorum</i> , white.	<i>Thomsoni</i> , deep scarlet.
<i>Falconeri</i> , creamy-white.	
<i>ficulacteum</i> , white with crimson blotch.	

Twelve small shrubs 3-5 feet high:

<i>bullatum</i> , white.	<i>glaucum</i> , rose-purple.
<i>callimorphum</i> , pale rose.	<i>baematodes</i> , crimson.
<i>ciliaum</i> , pale pink.	<i>moupinense</i> , white.
<i>citriniflorum</i> , yellow.	<i>plebeium</i> , rose-lilac.
<i>dicbroanibum</i> , orange.	<i>racemosum</i> , pink.
<i>floccigerum</i> , blood-red.	<i>Williamsianum</i> , pink.

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Twelve dwarf rhododendrons for the rock garden :

<i>anthopogon</i> , white-pink.	<i>ledoides</i> , white flushed rose.
<i>calostrotum</i> , rose.	<i>myrtilloides</i> , claret mahogany.
<i>cbryseum</i> , yellow.	<i>primulinum</i> , sulphur yellow.
<i>fastigiatum</i> , plum-purple.	<i>repens</i> , blood-red.
<i>bippophaeoides</i> , lavender.	<i>Sargentianum</i> , white.
<i>intricatum</i> , lavender.	<i>scintillans</i> , lavender-blue.

Twelve rhododendrons for a cold garden. This does not include dwarfs :

<i>ambiguum</i> , yellow.	<i>glischbrum</i> , pink.
<i>auriculatum</i> , white.	<i>baematodes</i> , crimson.
<i>callimorpbum</i> , rose-pink.	<i>moupinense</i> , white.
<i>campanulatum</i> , pale mauve.	<i>oreotrepbes</i> , rose.
<i>chartophyllum praecox</i> , white with orange or pink blotch.	<i>pachytricum</i> , white with crimson blotch.
<i>cyanocarpum</i> , bluish-white or pale pink.	<i>yunnanense</i> , pale pink.

Twelve rhododendrons for a moist, well-sheltered garden :

<i>arboreum</i> , white, pink, blood-red.	<i>fulvum</i> , pale-rose.
<i>Aucklandii</i> , white.	<i>Genesterianum</i> , plum-purple.
<i>barbatum</i> , scarlet.	<i>lanatum</i> , yellow.
<i>Beesianum</i> , white or deep rose.	<i>orbiculare</i> , rose.
<i>Clementinae</i> , white.	<i>rbantum</i> , pink.
<i>eriogynum</i> , crimson.	<i>Farrer</i> 918.

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LIST OF NURSERYMEN

The following list of some of the principal nurserymen who deal in rhododendrons may be of some assistance. I have tried to make it as complete as possible, but if inadvertently there happen to be any names left out, I hope that the nurserymen concerned will forgive me.

Messrs. R. and G. Cuthbert, Southgate, Middlesex. One of the chief importers and raisers of Ghent and Occidentale azaleas.

The Donard Nursery Co., Newcastle, Co. Down, Ireland. Species and hybrids.

Messrs. L. J. Endtz and Co., Boskoop, Holland. Hardy hybrids and azaleas.

Messrs. Fisher Son and Sibray, Handsworth, Sheffield. Hardy hybrids, including Duchess of Portland.

Messrs. R. Gill and Sons, Falmouth, Cornwall. Himalayan Rhododendrons and raisers of such fine hybrids as Gill's Goliath and Gill's Triumph.

Messrs. Hillier and Sons, West Hill Nurseries, Winchester. Species and hardy hybrids.

Messrs. Anthony Koster and Co., Hollandia Nurseries, Boskoop, Holland. Raisers of many of the finest azaleas. Also hardy hybrids.

Mr. R. C. Notcutt, The Nursery, Woodbridge. Species and hybrids.

Mr. G. Reuthe, Hardy Plant Nursery, Keston, Kent. Species and hybrids.

Messrs. W. H. Rogers and Son, Ltd., Red Lodge Nursery, Bassett, Southampton. Hardy hybrids.

Messrs. Walter C. Slocock, Goldsworth Nurseries, Woking, Surrey. Species and hybrids.

Mr. James Smith, Scotland Nurseries, Tansley, Matlock. Caucasicum hybrids.

Messrs. C. B. Van Ness, Boskoop, Holland. Hardy hybrids; raisers of such fine hybrids as King George and Earl of Athlone.

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Messrs. Robert Veitch and Son, Royal Nurseries, Exeter. Species new and old, and hybrids.

Messrs. Vilmorin Andrieux et Cie, Verrières-le-Buisson, Seine-et-Oise, France. Chinese species.

Messrs. R. W. Wallace and Co., The Old Gardens, Tunbridge Wells, Kent. Hardy hybrids, azaleas.

Mr. Anthony Waterer, Knaphill, Woking. Raiser of many fine hybrids and azaleas.

Messrs. John Waterer Sons and Crisp, Ltd., Bagshot, Surrey. Hardy hybrids, azaleas.

Mr. H. White, Sunningdale Nurseries, Windlesham, Surrey. New Chinese species, hardy hybrids, azaleas.

